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WITH the holding of the election a very curious state of affairs has ensued in Connecticut bearing on the long fight of more than four years' standing over the creation of a new public utilities commission. All through the campaign that question figured prominently. Candidates were "heckled" about it, a state business men's association pushed the issue and campaign orators on the stump dilated much on the theme. Yet in the actual election of legislators they were chosen far less on a basis of their views on public utilities than for their favor of one or the other of two candidates for United States senator. The election resulted in the choice of a candidate of one party as governor, and a legislature controlled in both branches by the other party, which, by what seems, unfortunately, an inexorable law of partisanship, will shrink from allowing an opposing executive to appoint members of a new commission. Then the important matter of the form and method of appointment becomes a complication at the outset. Finally the railway employees of the state, solicitory to protect their increased wages, are appa-

rently to join hands with the corporations and start a back fire on the measure as representatives of several thousand votes and a power at the polls. All this shows, though in somewhat novel aspects that intrusion of politics into an economic issue which, all over the country, has been so baleful an influence on railway commissions and cognate bodies. And, beyond the matter of the legal mechanism of the commissions and their powers and functions under statutes, is the more vital matter of their membership as selected by the appointing power. If Connecticut, after her long and distressful experience with a bad railway commission, emerges next year with a good law and a good commission, it will be good fortune in the face of present omens, which indicate grave doubts on her securing any new commission at all. It looks now, indeed, like a repetition of the travesty of last year, when, after mighty legislative throes, no new commission was born and the old "political" commission stood pat and smiled.

IN the first paragraph of our comments on the annual report of the Northern Pacific, published in our issue of October 28, the figures for total operating revenue were, through an error, given in place of the figures for total operating expenses. Total operating expenses of the Northern Pacific amounted to \$45,987,405 in 1910 and to \$38,020,005 in 1909. It is proper to point out in this connection that notwithstanding the unavoidable increase in operating expenses in 1910, as compared with 1909, the operating ratio of the Northern Pacific was 61.71 per cent., which is a lower operating ratio than any other road west of the Mississippi, with the exception of the Union Pacific and the Great Northern. The Great Northern had an operating ratio of 60.93 per cent. last year, and the Union Pacific, 52.02 per cent. Stating the same thing in another way, the Northern Pacific was able to save more out of each dollar of revenue than was any other road in the West, with the exception of the two named above.

THE New York State Public Service Commission, Second district, has ordered the New York Central to change the time of passenger train No. 72, an accommodation running from Syracuse to Albany in the afternoon. It appears that formerly this train left Utica at 5:10 p. m. after a stop of 20 minutes; and there was another one which left there two hours later. When business fell off because of the competition of a new electric road, about four years ago, the later train was taken off, and No. 72 was held in Utica until six o'clock. This inconvenienced a lot of workmen living at Fort Plain and other places east of Utica, and it is on their complaint—which appears to have been four years in coming to a head—that the commission has told the railway company that it must either change No. 72 back to its earlier hour or else put on another train. In a similar case, on the Delaware & Hudson, the commission has ordered the restoration of a train which ran north to Glens Falls in the morning, returning in the evening, a number of commuters complaining that the discontinuance of the train, which had been running for more than six years, compelled them to leave their families and board at the place of their work (Glens Falls). It appeared at the hearing that only five "commuters" used this train. What, in such cases, can the unhappy passenger traffic manager do? Theory and practice are difficult to harmonize. The traffic manager who tries to give people in country districts as good facilities as he provides for suburban territory, where there are fifty or a hundred times as many passengers, ought to be commended for his friendly attitude toward the people, even if he fails in his ambition to promote everybody's happiness; but "vested right" steps in, and the only commendation that he receives is an order to continue his experiment forever, whether it pays or not. Quite possibly a commission order is in many cases a salutary lesson for the passenger agent, for he sometimes forgets that the railway and the passenger are not equally well situated to retreat

from a bad bargain. The passenger may be obliged to stay for the rest of his life in his new situation. In this Utica case, the New York Central showed not only that the patronage of train No. 72 had fallen off because of the introduction of trolley competition, but also that there was other business which needed accommodation but which would not be reasonably satisfied by a train starting before six o'clock. The Delaware & Hudson showed that the village of Gansevoort, whence came the complaint, has a population of about 170, and that the trains had been run at a decided loss for a number of years. For the first eight months of this year the entire earnings of these trains amounted to less than 40 cents a mile, varying from 18 cents to 39 cents, while the cost of running them was \$1.35 a mile. During ten days of the past summer the maximum number carried at any one time was nine; the minimum nil. Possibly, we have not got all the facts in this case; but at this distance it looks as though the only way to impart respectability to a commission order like that here issued would be to establish state ownership, and done with it. State ownership makes many absurd things seem reasonable—on the surface. With that change accomplished, how simple would be the problem! Put on the trains freely and then if the receipts were not satisfactory the legislature at Albany could make up the lack by a tax on the incomes of the denizens of Wall Street.

MEGALOMANIA.

["Megalomania (*Pathology*). A form of mental alienation in which the patient has grandiose delusions."]

MR. ROOSEVELT is a very great man. He has been a near candidate for the highest title, Our First Citizen, which we have to confer in this country. He has enjoyed a greater popularity than any one, possibly excepting General Grant, has had during his life time. And he seemed to have fairly earned that high esteem by his incomparable activities and advocacy of the homely virtues. His undertakings to promote hostility between wage earners and other earners have been much discussed as being developments of his character. This is not reasonable; his defections seem rather to indicate a mental lesion which needs quite different treatment, and consideration of it may be useful now when a sincere effort is being made for more frankness and a better understanding between corporations and their fellow citizens.

It is now plain that, as Senator Root predicted, the rebuff at the election will simply add intensity to Mr. Roosevelt's activity and probable candidacy two years hence. It is fair to reckon with him now as a public man, seriously and kindly.

We believe there is no question of his sincerity, at least of his belief in his own sincerity; of his earlier motive for activity in politics, a desire to do good which in the beginning far overshadowed personal ambition; of his belief in his theories; integrity of purpose; courage; ability and volubility; and these combined with his physical powers have made him the most effective stump speaker in the land. In all these respects he is quite like Mr. Bryan, but unlike in that Mr. Bryan's truthfulness, personal integrity and loyalty have never been questioned, while Mr. Roosevelt's record in these respects is becoming a long and painful one, and it is not consistent with his other admirable qualities.

He has urgently solicited and received from many corporations large contributions of money for election expenses and large expenditures of money and service for personal expenses. A few railway and other company instances have been publicly and generally mentioned in this connection. The number is much larger. The amounts of money so paid have been very large. Presidents, or other officers who authorized such payments, undoubtedly justified them variously. Free transportation and free special trains demanded by the highest officer in the land were deemed to be courtesies not to be refused, although they were contrary to the letter of the law. Contributions of great sums, personally solicited for campaign purposes, were

wisely made if they helped in the election of an upright, judicial and learned reformer, such as Mr. Roosevelt was believed to be in comparison with Mr. Bryan.

The really great reform desired, and well worth paying for, was a strict enforcement of existing laws, and in particular those against special privileges, the non-enforcement of which left railways helpless under competitive conditions. This was the hope and promise of the Roosevelt campaigns; for he promised, when promoted from the vice-presidency, to enforce the Elkins law and so protect the railways against each other and against the irresistible combinations for compelling rebates. There may have been contributions, both of transportation and of money, made under stress; ignoble acts, if you please to call them so, but the conscientious officer knows that fear of unrighteous attack, of unjustifiable injury to his stockholders must be taken into account; and Mr. Roosevelt's repeated emphatic proclamations that in prosecutions he would make sharp distinctions between "good" and "bad" corporations had a sinister meaning, not to be lightly disassociated with personal relations and campaign contributions. The protection of Paul Morton from prosecution in the Atchison rebate cases was by many construed to be formal notice of Mr. Roosevelt's policy at that time.

It makes no difference, for present purposes of consideration, whether these acts were inspired by fear or by hope. The railways were emerging. Trunk line associations, presidents' agreements, rebates and all forms of secrecy and mystery were commercial failures. No homilies were needed to show enlightened railway officers that, in the increasing intensity of the struggle for supremacy by cities and communities classed as trade centers, the control of rate making was surely passing away from the railways, and that publicity was the only available engine for determining where that control should rightly rest. Roosevelt and his type seemed distinctly preferable to the less accomplished Bryan.

But now there are two Richmonds in the field; the exponent of the Ten Commandments and the discoverer of the fetching literary paraphrase of the Golden Rule, "the square deal," scouts truth, ignores every correction of his misstatements, finds liars in plenty among all who disagree, chills to his warmest friend, the President of the United States, and clings only to those who, and for only so long as they, worship him and his inconsistencies.

In the late campaign he repeated and clung to certain specific damaging accusations against three candidates. He was furnished and there was widely published complete evidence of his untruths. He ignored and repeated them, and the people elected these three men governors of their respective states.

His conscience is probably the most satisfactory bureau in his highly departmental organization. It is not a water-tight compartment, inaccessible except through its conventional channel; it pervades and liquifies a stoppage in any other department at a single impulse from the starting valve. It was an emollient to the sporting section when the African expedition needed to be financed. It made corporation officers and high financiers attractive and useful, when needed, and painted them black for popular view. It is Napoleonic in quick justification of methods for helping the fight, while blinding the sight of wounded and dead—the feelings hurt and reputations destroyed by recklessness.

Seven years ago Assistant Postmaster General Tyner was accused of complicity in mail frauds. Pending trial, Mr. Roosevelt sent to Congress a memorandum condemning him as a lawbreaker. On trial Mr. Tyner was proved innocent. At the age of 77 years, after nearly 40 years of public service, and on his death bed, he wrote this letter to Mr. Roosevelt:

"My remaining hours are few, and though my house is in order and with clear conscience I await from day to day the irrevocable summons, nevertheless I cannot close my eyes without first appealing to you, Mr. President, as my chief accuser, to endeavor, in so far as you can, to right the great wrong which you have unwittingly done me."

The prayer was not granted.

Was the message he sent to the Pope by Bellamy Storer—

confirmed by Archbishop Ireland—a manufactured narrative, a lie? Among the hundreds of public men he has denounced as liars when they quoted his statements and promises, are there none who told the truth? Are all the judges, who interpret the constitution and the laws in decisions disagreeable, unfaithful and incompetent? To confess error, to admit a mistake, to exonerate an unjustly accused dying man, require only the qualities of courage and honesty. Mr. Roosevelt's courage is as undeniable as is, we believe, his intention to be honest, but his malady is serious.

Medical authorities classify mental derangements under four heads: Mania, dementia or fatuity, melancholy and idiocy. Mania is characterized by a disorder of one or several of the faculties. It is "manifested by extravagant, gay, gloomy or furious emotions; the gestures and words seem automatic."

Megalomania is defined to be: "A form of mental alienation in which the patient has grandiose delusions."

THE ELECTION AND THE RAILWAYS.

THE effect of the recent general election on the railway business can hardly fail to be good. The Mann-Elkins act passed by the last Congress was very much the most radical federal law for the regulation of railways ever passed. The republican administration and republican candidates for re-election to Congress pointed to it as one of the achievements of their party which entitled it to support at the polls. The argument had no perceptible effect unless it was the opposite of that intended. The republican candidates went down to defeat almost everywhere. Chairman Mann, of the house committee on interstate and foreign commerce, who put his name on the bill, managed to pull through, but by a greatly reduced majority. Some may say that the people objected to the measure because it was not radical enough; but we note that Governor Stubbs, of Kansas, who has been particularly strident and active in agitating against the railways, was elected by a largely reduced majority and ran a good deal behind his ticket; and that in Iowa, where anti-railway agitation, fomented mainly by Senator Cummins, has been chronic for some years, the number of republican congressmen elected was considerably reduced and the "insurgent" candidates for state offices were elected by heavily reduced majorities.

One of two constructions must be put on these results. Either the people meant positively to condemn the railway legislation passed by the republican party, or they took so little interest in it that it attracted far less votes than the party's tariff and other policies repelled. As for that very large element which is connected with railways and railway supply concerns, there is no question but that it did mean to condemn the numerous anti-railway measures that have been passed; and, as it has large voting power, its attitude probably accounts in a much larger measure than most politicians realize for the results in many places. On either theory it is evident the politicians greatly over-estimated the amount of public sentiment for radical railway legislation and that their enthusiasm for it is apt to cool. Therefore, there seems ground to hope that there is not much danger of further harmful railway legislation during the session of the old Congress which begins next month.

A second point favorable to the railway industry is that the next Congress will consist of a democratic house and a republican senate. With a national election only two years off, both houses of the new Congress are pretty sure to devote most of their time to playing the great American game of politics. The democrats won the recent election mainly because the people were discontented with the Taft administration and disgusted with the Payne-Aldrich tariff law. Political strategy naturally will, therefore, suggest to the democrats the expediency of passing an extreme tariff measure which they know the republican senate will not accept and for which they will get the credit and for the rejection of which the republican senate will get the blame, and of doing all they can to harass and embarrass the republican

administration. This holds out to the railways the alluring prospect of being given a two-years' rest from having to oppose, discuss, and adapt themselves to, new forms of federal regulation.

In the good old days when Mr. Bryan led the democratic party, railway men thought that they were most apt to get a square deal from the republican party, but after Mr. Roosevelt's star became ascendant in the republican party, that party showed itself so far superior to the democratic in devising means of harassing the railways that most railway men, as such, now politically speaking, "play no favorites." They have learned that the railways have no friends in either political party except while they are freely distributing passes and contributing large sums to campaign funds, and that those, like Mr. Roosevelt, who are the largest beneficiaries of these contributions are apt, when they think they can gain anything by it, to turn into their most censorious critics and most reckless and ruthless assailants. So, as far as railway men are concerned, it is not a case of "loving either were fother dear charmer away." With them it is a case of trying to decide which party is apt to bedevil them the least. As for some years they have received nothing but injury from either, they are apt to pronounce a "plague on both your houses," and instead of going to the political parties for protection, go to the people for it. That is where they should have gone long ago and where they ought always to go in future. And if, meantime, those connected with railways and railway supply concerns continue, regardless of party, to "lay for" the politicians who attack the railways it will be a matter of only a short time until the roads will be able to get a "square deal."

The result of the election is apt to hearten the railways to some extent and in some measure to increase their expenditures for improvements and extensions. But the railway industry was not waiting on the election. It was and still is waiting on the decisions of the Interstate Commerce Commission in the cases involving advances in freight rates. On the whole, proper legislation for revision of the tariff would benefit the railways, because the existing tariff laws tend to increase the cost of almost everything that they buy. There is no certainty, however, that anything will be done that will tend to reduce their expenses, and, therefore, before they begin to increase largely their expenditures they want to know what increases they are going to have in their earnings.

CHICAGO, MILWAUKEE & ST. PAUL.

THE Chicago, Milwaukee & St. Paul Railway Company has issued its own securities, on account of the cost of building its Pacific coast extension, to the total amount of \$127,000,000. Of this amount \$99,000,000 was common stock of the St. Paul, on which the company is paying 7 per cent. dividends. The remaining \$28,000,000 was 4 per cent. bonds. The total yearly interest requirements, therefore, on these securities amounts to \$8,051,736, or at the rate of \$673,978 per month. The Chicago, Milwaukee & Puget Sound, the subsidiary operating the Pacific coast extension, has issued its own securities to the St. Paul in payment for advances for construction. During the 11 months ended June 30, 1910, the Chicago, Milwaukee & Puget Sound earned net operating income at the rate of \$477,771 per month. The annual report of the Puget Sound shows that actually the Puget Sound company paid the St. Paul only at the rate of 4 per cent. on \$100,000,000 for the use of money that the St. Paul had put into the extension. The \$28,000,000 St. Paul bonds were not outstanding during the entire fiscal year, but if the extension is to carry itself in the present year it will have to earn \$671,000 per month, after paying operating expenses and taxes, which is something over \$190,000 per month more than it earned in 1910.

The Pacific coast extension runs through a territory in places very thinly settled; but it is a territory capable of great future development. The operating and traffic statistics of the Puget Sound clearly reflect the character of the territory through which the road runs. For instance, the average haul of each ton of revenue freight was 596 miles. This is probably one of

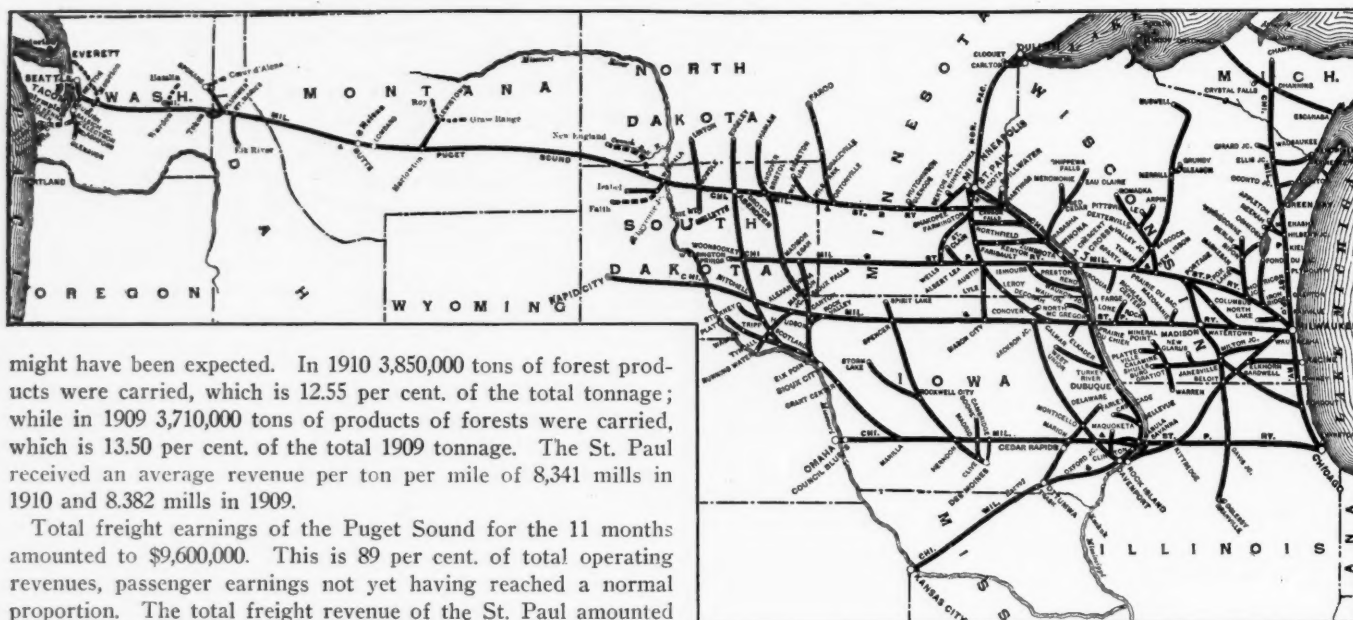
the longest average hauls of any road in the country. The St. Paul's own average haul for revenue freight was 174 miles; and the Canadian Pacific, which has some points of resemblance to the Pacific coast extension, had an average haul of 378 miles.

The Puget Sound carried 1,500,000 tons of freight in the 11 months ended June 30, and of this 29.76 per cent. was products of lumber and 21.44 per cent. was manufactures. Products of mines furnished only 16.41 per cent. of the total tonnage. As might be expected from the large percentage of manufactures, the company received 1.046 cents, a fairly high average revenue per ton per mile. The St. Paul's own statement of commodities carried shows some changes, due, apparently, to the business turned over to the St. Paul by its subsidiary. Of the total 30,699,000 tons carried in 1910, 6,056,000 tons, or 19.73 per cent., was furnished by manufactures. This compares with a total tonnage of 27,500,000 tons in 1909, of which manufactures furnished 4,899,000 tons, or 17.81 per cent., of the total tonnage. The tonnage of lumber, however, did not show the increase that

of this review show the results of operation of the St. Paul and of the Puget Sound in 1910.

The balance sheet of the St. Paul is not in the form prescribed by the Interstate Commerce Commission, but is prepared in the same manner as previous balance sheets. It shows bonds and stocks of other companies owned at a book value of \$146,950,000, comparing with \$105,470,000 bonds and stocks of other companies held on June 30, 1909. Cash on hand totaled \$5,500,000 in 1910, as against \$1,900,000 in 1909. There is, however, \$4,000,000 bills payable on the 1910 balance sheet, with no bills payable in 1909.

The Puget Sound's balance sheet shows that it has \$100,000,000 capital stock, of which the St. Paul owns all but directors' shares; and a funded debt of \$123,000,000, all of the securities representing this debt having been issued to the St. Paul; and these securities presumably bear interest at 4 per cent. As liabilities in addition to its capital stock and funded debt, the Puget Sound owes the St. Paul \$15,900,000. The railway, prop-



Chicago, Milwaukee & St. Paul and Pacific Coast Extension.

The lines from St. Paul to Duluth and from Plummer to Spokane are owned by the Northern Pacific.

might have been expected. In 1910 3,850,000 tons of forest products were carried, which is 12.55 per cent. of the total tonnage; while in 1909 3,710,000 tons of products of forests were carried, which is 13.50 per cent. of the total 1909 tonnage. The St. Paul received an average revenue per ton per mile of 8.341 mills in 1910 and 8.382 mills in 1909.

Total freight earnings of the Puget Sound for the 11 months amounted to \$9,600,000. This is 89 per cent. of total operating revenues, passenger earnings not yet having reached a normal proportion. The total freight revenue of the St. Paul amounted to \$44,900,000 in 1910, which is 69 per cent. of total operating revenue; in 1909 the freight revenue was \$42,300,000, or 71 per cent. of total operating revenue. Total operating revenue in 1910 was \$64,800,000; in 1909, \$59,900,000.

Operating expenses of the St. Paul in 1910 amounted to \$44,800,000, an increase of \$6,100,000 over 1909. The greater part of the increase in operating expenses came in the cost of conducting transportation. Transportation expenses last year amounted to \$26,300,000, an increase of \$4,600,000 over 1909. Maintenance of way cost \$8,500,000 in 1910, an increase of \$1,200,000 over the previous year; and maintenance of equipment cost \$7,700,000, an increase of \$450,000. The following table shows the unit costs of maintenance:

	1910.	1909.
*Maintenance of way and structures, per mile.....	\$912	\$785
†Repairs, per locomotive	2,361	2,006
" " passenger car	549	489
" " freight car	64	68

*Per mile of first, second, third, etc., track, the cost of two miles of siding and switch tracks being taken as equal to the cost of maintenance of one mile of main track.

†This is for repairs only and does not include renewals, depreciation or superintendence charges.

The St. Paul ordered a considerable quantity of passenger equipment last year, but it was not delivered before June 30.

The Puget Sound's operating expenses last year totaled \$5,300,000; transportation expenses amounting to \$3,500,000. Naturally, maintenance of way was comparatively inexpensive, since most of the sums spent on roadbed, station buildings, etc., were chargeable to construction costs. The sum spent in the 11 months for maintenance of way and structures was \$460,000; maintenance of equipment cost \$890,000. The tables at the end

erty and franchises of the Puget Sound are carried at a book value of \$236,300,000. The company had \$1,500,000 cash on hand on June 30, 1910.

The following table shows the results of operation of the St. Paul in 1910, compared with 1909:

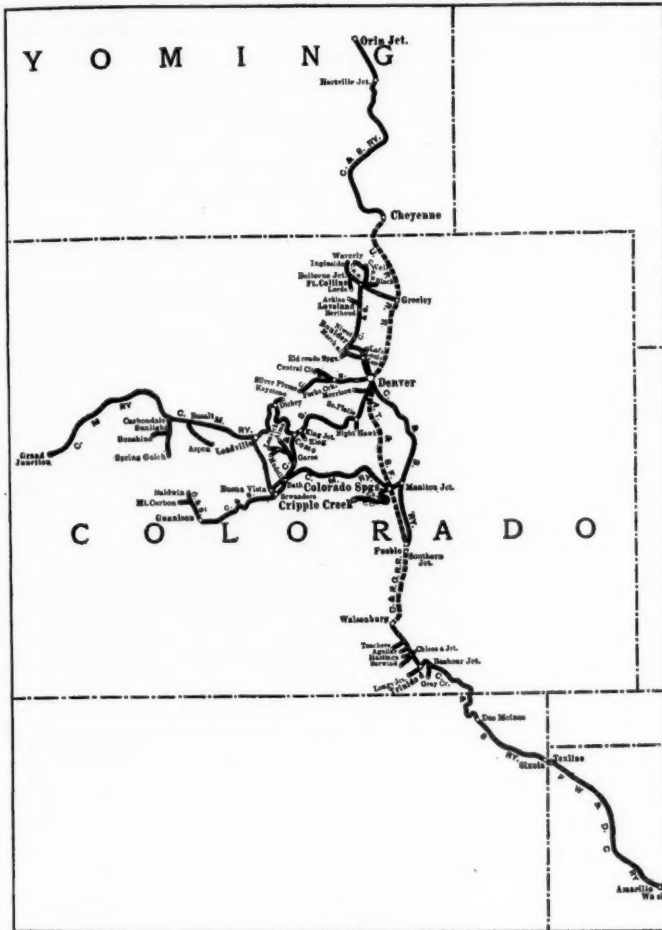
	1910.	1909.
Average mileage operated.....	7,512	7,512
Freight revenue	\$44,909,137	\$42,241,651
Passenger revenue	14,786,744	12,774,852
Total operating revenue	64,846,894	59,897,463
Maint. of way and structures.....	8,472,825	7,288,603
Maint. of equipment.....	7,724,569	7,270,774
Traffic	1,122,711	1,334,006
Transportation	26,347,283	21,764,471
Total operating expenses	44,790,997	38,731,239
Taxes	2,529,373	2,428,676
Operating income	17,734,144	18,737,549
Gross corporate income	25,493,587	18,967,918
Net corporate income	18,681,784	13,112,200
Dividends	16,231,453	11,802,296
Surplus	2,450,331	1,309,904

The following table shows the results of operation of the Puget Sound for the 11 months ended June 30, 1910:

Average mileage operated	1,434
Freight revenue	\$9,582,570
Passenger revenue	995,422
Total operating revenue	10,765,704
Maint. of way and structures.....	459,048
Maint. of equipment	889,727
Traffic	314,777
Transportation	3,488,837
Total operating expenses	5,274,860
Taxes	235,361
Operating income	5,255,483
Gross corporate income	5,943,950
Net corporate income	2,196,206

COLORADO & SOUTHERN.

THE Colorado & Southern performs two important services for the Burlington and, by the same token, for the state of Colorado. It brings Denver, the southwestern terminus of the Burlington, as near to tidewater as is Chicago. It taps the great mineral wealth of Colorado with a network of branches or com-



Colorado & Southern System.

paratively short lines, giving an outlet to this mineral and coal and giving the Burlington an important feeder. The Chicago, Burlington & Quincy bought, early in 1909, a controlling interest in the Colorado & Southern. The growth of the Colorado & Southern since it was lopped off the Union Pacific has been nothing short of wonderful. When the road was in the hands of a receiver 17 years ago it was in as bad physical condition as the worst of the Denver & Rio Grande's lines. It had no outlet of its own for traffic, and it operated in a country that fairly bristled with railway impossibilities. Under independent management the lines from Colorado were extended by purchase or construction until the road reached Houston, on the Gulf. In the meantime the natural wealth of Colorado gave the company the incentive, and the management had the foresight and perseverance to put its mountain lines into excellent shape.

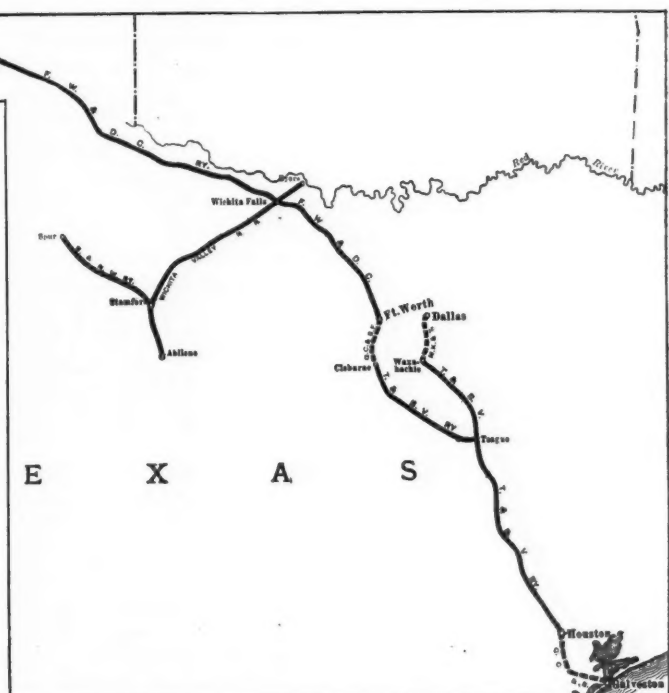
In 1910 the Colorado & Southern system operated 1,673 miles of standard gage road and 389 miles of narrow gage, all of the narrow gage line being in Colorado. The road is a far larger carrier of low grade commodities, especially coal and ores, than is generally realized. The lines in Colorado are the heavy carriers of coal and ores. The long main line extending down into Texas is mainly dependent on through traffic between Colorado and the Gulf and on agricultural products. In 1910 the crops were not particularly good through most of the territory served by the Colorado & Southern, and there are indications in the annual report that the company needed additional facilities for handling the low grade traffic offered. For instance, hire of

equipment cost last year \$289,350, as against \$155,689 in 1909. During the year the company ordered 22 locomotives and 1,250 freight train cars, and is building in its shops at Denver 240 freight train cars. This equipment has been coming in since June, and contracts call for the delivery of all of it before December.

Last year the company earned gross \$16,800,000, an increase of \$1,700,000 over 1909. Operating expenses last year amounted to \$10,860,000, an increase of \$640,000 over the year before. The operating ratio was therefore 64.75 in 1910 and 67.81 in 1909. Comparatively few roads have been able to show a decreased operating ratio in 1910. On the other hand, the increase in operating expenses came almost entirely from increased cost of transportation. This expense amounted to \$5,380,000 in 1910, consuming 32 per cent. of gross revenues. This is an increase of \$567,000 over 1909 transportation expenses, and in that year transportation expenses amounted to but 31.91 per cent. of gross. Maintenance of way last year cost \$2,190,000, an increase of \$26,000; and maintenance of equipment cost \$2,520,000, an increase of \$73,000. After the payment of taxes and rentals the company had available for interest and dividends in 1910 \$5,600,000, against \$4,900,000 in 1909.

Four per cent. dividends were paid on the first and second preferred stock and 2 per cent. on the common. The payment of but 2 per cent. on the common stock marks a conservative policy of establishing a thoroughly strong profit and loss credit before the Burlington is ready to seek a more adequate return on its investment. Last year there was a surplus of \$1,650,000 credited to profit and loss, and the company could have paid 4 per cent. dividends on its common stock and still have had a larger credit to profit and loss than the surplus of \$899,000 credited in 1909.

The balance sheet also shows the company in a stronger position at the end of last year than it was at the beginning. Current assets totaled \$2,500,000, of which \$1,670,000 was cash, in 1910; and \$1,750,000, of which \$560,000 was cash, in 1909. Cur-



rent liabilities at the end of last year were \$2,475,000, with no bills payable; and in 1909 current liabilities totaled \$2,244,000, with an additional \$100,000 bills payable.

A highly interesting feature of the Colorado & Southern's report is the distinction made between traffic statistics for narrow gage lines and for standard gage. The total number of revenue

tons carried one mile was 1,249,000,000 last year and 994,000,000 the year before. Of this ton mileage 1,380,000,000 was carried over standard gage road last year and 39,600,000 over narrow gage.

The proportion of increase in ton mileage was considerably greater on the narrow gage lines than on the standard gage. The freight density on the standard gage lines in 1910 was 745,453 tons one mile per mile of road, and on the narrow gage lines, 74,045 tons. The average haul per ton for all lines was 149 miles in 1910. The average haul per ton for all lines was 138 miles in 1909.

The train loading, both on the standard gage line and narrow gage, showed a notable increase over 1909. On the standard gage line the average train load in 1910 was 325 tons, and in 1909, 287 tons. On the narrow gage line the train load was 93 tons in 1910 and 89 tons in 1909. Some indication of the cost of operating the mountain lines is shown by the fact that the average number of locomotives per train on the narrow gage lines was 2.23 last year, and the average number of cars per freight train was 12.51. The average revenue per ton per mile on the system was 9.64 mills in 1910 and 10.67 mills in 1909.

The Colorado & Southern makes a comprehensive classification of its commodities, showing both the number of tons of each class of commodities allocated as between traffic delivered by connections and traffic originating on home lines and the number of dollars earned from the carriage of each class of commodities. In 1910, 5,350,000 tons out of a total tonnage of 8,360,000 tons was products of mines. This compares with 4,350,000 tons of products of mines carried in 1909. The revenue from this low grade traffic totaled \$5,650,000, or 47 per cent. of total freight revenues in 1910; and \$4,587,000, or 43.27 per cent. of total freight revenues in 1909. Products of agriculture are more important, both from the point of view of tonnage and of revenues, than are manufacturers. Last year 995,000 tons of agricultural products were carried, earning \$1,960,000 revenue. The is 16.23 per cent. of total freight revenues. In 1909 only a slightly less tonnage, and correspondingly less revenue, was furnished by agricultural products. Manufactures in 1910 furnished 709,500 tons of freight and \$1,080,000 of revenue. This is 8.98 per cent. of total revenues. In 1909 the tonnage of manufactures was 631,000 and the revenues from the carriage of this tonnage was \$987,000.

The acquisition of the Colorado & Southern by the Burlington gives the Burlington a line from Billings, Mont., where it connects with the Great Northern and the Northern Pacific, to Houston, Tex., on the Gulf of Mexico. The value of this north and south line to the Burlington is not easy to estimate. The value of the Colorado & Southern as a feeder to the Burlington is unquestionably great; and even taking the acquisition of a controlling interest in the Colorado & Southern as purely an investment of funds, it would appear from the showing made in 1910, taken in connection with the past record of the Colorado & Southern, that the investment was a thoroughly sound one.

The following table shows the principal figures for the operations of the Colorado & Southern system in 1910, compared with 1909:

	1910.	1909.
Average mileage operated.....	2,042	1,980
Freight revenue	\$12,040,828	\$10,600,743
Passenger revenue	3,918,093	3,756,695
Total operating revenue.....	16,777,981	15,080,412
Maint. of way and structures	2,188,645	2,162,560
Maintenance of equipment....	2,521,273	2,447,906
Traffic	247,271	277,664
Transportation	5,378,794	4,811,851
Total operating expenses.....	10,863,455	10,225,688
Taxes	477,870	393,907
Operating income	5,414,333	4,453,683
Gross corporate income.....	5,651,700	4,920,385
Net corporate income.....	2,951,633	2,198,859
Dividends	1,300,000	1,300,000
Surplus.	1,651,633	898,859

HOCKING VALLEY.

IT is probable that the Hocking Valley was worked just about to its full capacity during the greater part of the fiscal year ended June 30, 1910. This was primarily due to the conditions in the soft coal market, and possibly also in part to the change in control of the Hocking Valley. Previous to March 10 control of the common stock had been held jointly by five companies—the Pittsburgh, Cincinnati, Chicago & St. Louis owning a two-sixths interest in the controlling stock; the Lake Shore & Michigan Southern, one-sixth; the Baltimore & Ohio, one-sixth; the Erie, one-sixth, and the Chesapeake & Ohio, one-sixth. There had been an attempt to form a Hocking Valley system, the plan being to vest control of the Kanawha & Michigan, the Toledo & Ohio Central and some other roads with the Hocking Valley. The Ohio courts, however, had enjoined the enactment of this plan, which, among other things, called for the deposit of the \$15,000,000 preferred stock of the Hocking Valley with a syndicate.

The Chesapeake & Ohio, desiring an outlet to the Lakes, found in the tangled situation in Ohio an opportunity to buy \$6,347,800 common stock of the Hocking Valley, which, together with the stock already held, gave it \$7,501,000 out of the total \$11,000,000 common stock. The C. & O. also bought a half interest in Kanawha & Michigan. The Lake Shore & Michigan Southern bought from the Hocking Valley a half interest in the Kanawha & Michigan and control of the Toledo & Ohio Central. This gave the Lake Shore a line of its own from the Ohio river to Toledo, and also gave the Chesapeake & Ohio a line from the Ohio river to Toledo, the Lake Shore and the C. & O. owning the Kanawha & Michigan jointly. In this arrangement the C. & O. got somewhat the better line.

The Hocking Valley is an important north and south coal road. It operates but 350 miles of line, carrying, however, in 1910 11,200,000 tons of freight, of which 68 per cent. was bituminous coal. The road is single track, with the exception of about 41 miles, but is in excellent condition. Two hundred and thirty miles of the main line is laid with 80 and 90-lb. rail, and 87 miles is ballasted with stone and 167 miles with slag and cinders. The limiting factors in the capacity of the road are its coal handling facilities at Toledo and the lack of double track.

The number of tons carried one mile totaled 1,405,000,000 in 1910. This is an increase over 1910 of 408,000,000 ton-miles, or 41 per cent. This is a large ton mileage for a road 350 miles long; and the freight density, which was 4,000,000 tons in 1910, is very great for a road largely single track. By way of comparison, in the 1910 annual report of B. A. Worthington, receiver of the Wheeling & Lake Erie, Mr. Worthington says: "While traffic density for the main line and branches [of the Wheeling & Lake Erie] **** is shown as 2,500,000 tons, it will be interesting to note that the traffic density as representing the number of tons moved one mile per mile of road per annum on the main line between Huron and Pittsburgh Junction averaged 5,200,000 ****. For the month of July, 1910, the traffic density between Brewster and Pittsburgh Junction was at the rate of 6,400,000 tons **** which is probably the greatest traffic density of any single track railway in operation." It may be noted that the average length of haul on the Hocking Valley is long compared to its total mileage. In 1910 the average haul was 126 miles, an increase of two miles over 1909. The average revenue per ton per mile last year was 4.58 mills, a decrease of 0.27 mills, or 5.5 per cent.

The coal traffic moves almost exclusively north, so that the average number of loaded cars per northbound freight train in 1910 was 27.3, an increase of 1.3; and the average number of empty cars northbound was 3, a decrease of 1.4. The loaded cars per freight train southbound averaged 10.2 last year, a decrease of 0.5; and the empties southbound remained the same in 1910 as in 1909, namely, 22.1.

By far the greater proportion of earnings came from the carriage of freight, 82.6 per cent. of gross earnings last year being from freight traffic. Of the total tonnage carried, 48 per

cent. originated on the Hocking Valley in 1910 and 52 per cent. was received from connections; in 1909, 57 per cent. originated on the road and 43 per cent. was received from connections. As was mentioned, 68 per cent. of the total tonnage is bituminous coal; and products of mines, including bituminous coal, furnished 80.32 per cent. of the total tonnage. The next most important class of commodities is manufactures, which furnished 9.50 per cent. of the total tonnage, or 1,068,000 tons, in 1910. This compares with 838,000 tons furnished by manufactures in 1909.

All roads operating through the West Virginia coal fields showed large increases in tonnage carried in 1910 as compared with 1909; and those with connections to the Lakes showed a proportionately greater increase in westbound movement as compared with eastbound. This was due in part to the require-

on a 61.5 per cent. basis, as compared with a 66.8 per cent. basis in 1909 and a 69.9 per cent. in 1908. In the years previous to 1908 its operating ratio was lower.

Transportation expenses last year amounted to \$2,150,000, an increase of \$354,000 over 1909. The total figures for maintenance are shown in the table at the end of these comments; and the following table shows the unit costs of maintenance in 1910 and 1909:

	1910.	1909.
*Maintenance of way and structures.....	\$1,465	\$1,275
†Repairs per locomotive	1,889	1,598
" " passenger car	538	492
" " freight car	36	30

*Per mile of first, second, third, etc., track, two miles of siding and switch tracks being taken as equal to the cost of maintenance of one mile of main track.

†This is for repairs only and does not include renewals, depreciation or superintendence charges.

Over \$1,400 per track mile bespeaks a high standard of maintenance of way.

When the plan for putting the Toledo & Ohio Central and the Hocking Valley under joint control was abandoned, the small amount of H. V. preferred stock deposited was returned to the owners and the total \$15,000,000 stock outstanding was called for payment at par. This retirement of preferred stock was opposed by the holders of one-tenth of one per cent. of the stock; but the United States circuit court upheld the plan of the company, and the total \$15,000,000 preferred stock has been retired.

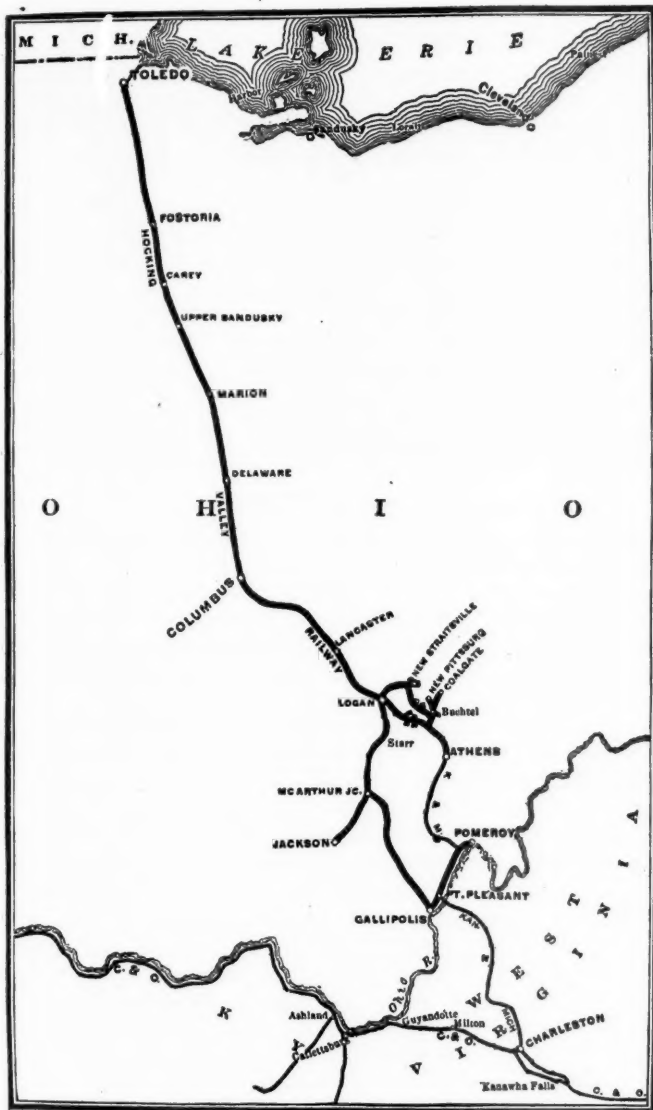
On June 30 there was \$11,000,000 common stock outstanding and \$19,900,000 bonds and \$2,687,000 equipment trust obligations. The common stock is at the rate of about \$34,000 per mile owned, and the funded debt and equipment obligations at the rate of about \$69,700 per mile owned. To retire the preferred stock the company borrowed on its notes \$2,500,000, and received from the Lake Shore & Michigan Southern \$10,200,000 for its \$4,510,000 stock of the Kanawha & Michigan and the bond of the Middle States Construction Company, exchangeable into all of the outstanding stock of the Toledo & Ohio Central. This year's report says that these securities were in the treasury of the company as free assets.

This being the case, the balance sheet, as given in the annual report for 1909, appears to be a misleading statement of assets and liabilities. Securities owned are carried on the 1909 balance sheet at \$1,956,635. After the sale of securities, realizing more than \$10,000,000, the company had in its treasury unpledged \$2,700,000 on June 30, 1910. In making this criticism of the 1909 balance sheet it is necessary, of course, to keep in mind that the management has entirely changed since the 1909 balance sheet was published.

On the retirement of the \$15,000,000 preferred stock, the directors proposed to increase the common stock outstanding by an issue of \$15,000,000 additional common stock. A stockholders' meeting to vote on this question was called, but, on the petition of the holders of a small amount of stock, action by the stockholders was enjoined, and the meeting has been adjourned from time to time pending a court review of the temporary injunction.

The company's plans, which call for the issue of this \$15,000,000 stock, include extensive improvements to the existing property. As has been pointed out, the road was worked almost up to its full capacity last year. The Chesapeake & Ohio has a large tonnage of coal which it is now shipping over other lines, notably the C. & O., north to the Lakes, a good part of which it can send over the Hocking Valley as soon as that road is in physical shape to handle this increased tonnage. The amount that the C. & O. could profitably send over the Hocking Valley is estimated at between one and two million tons a year. To handle this it is almost certain that a large part of the Hocking Valley main line would have to be double-tracked and its other facilities increased.

If the company had had the entire \$26,000,000 common stock outstanding that it is proposed to issue it would have earned 9.7



Hocking Valley.

The Kanawha & Michigan is shown by a light line running from Point Pleasant to a connection with the C. & O.

ments of Gary and other manufacturing plants recently established in the Middle West, and probably in part to the coal miners' strike in Illinois and some other Middle Western states. The Hocking Valley's earnings, both gross and net, were the largest in the history of the road. Last year its total operating revenues amounted to \$7,600,000, an increase over 1909 of \$1,700,000, or 28.76 per cent. Operating expenses amounted to \$4,650,000, an increase of \$728,000, or 18.54 per cent., over the previous year. After the payment of expenses, taxes and rentals the company had available for interest \$3,650,000, an increase over the previous year of \$993,000, or 37.35 per cent. In 1910 the road operated

per cent. on this stock. The common dividend is now at the rate of 4 per cent.

The following table shows the operations of the Hocking Valley in 1910, compared with 1909:

	1910.	1909.
Average mileage operated.....	350	347
Freight revenue	\$6,430,798	\$4,831,809
Passenger revenue	869,102	829,911
Total operating revenue	7,569,330	5,878,414
Maintenance of way and structures.	779,465	674,229
Maintenance of equipment.....	1,392,223	1,216,160
Traffic	89,296	90,310
Transportation	2,151,156	1,796,841
Total operating expenses.....	4,654,281	3,926,084
Taxes	287,469	235,738
Operating income	2,627,580	1,716,593
*Gross corporate income	3,652,096	2,698,087
Net corporate income	2,539,765	1,515,990
Dividends	973,028	1,040,000
Betterments	79,655	.....
Surplus	1,566,737	396,334

*In 1910 rentals, amounting to \$66,473, had been deducted. The 1909 rentals were included with interest, and were not deducted before arriving at gross corporate income.

NEW BOOKS.

Good Roads at Low Cost. By D. Ward King. Published for free distribution by the Pennsylvania Railroad Company, Philadelphia.

This pamphlet of nine pages is the latest feature of the campaign which is carried on by the traffic department of the Pennsylvania Railroad to stimulate the business of the road by instructing farmers along its line in the economical handling of their products. The special topic of this pamphlet is a drag, made of logs, invented by Mr. King, designed to keep country roads in order and maintain the ditches at their sides with the least possible expense. The idea is to scrape the earth from the ditches to the center of the road after each rainstorm. Mr. King exhorts each farmer to take care of the road from his own house to that of the nearest neighbor.

Supplement to the Iron and Steel Works Directory. 168 pages; 6 in. x 8 1/4 in.; cloth. James M. Swank, General Manager, American Iron & Steel Association, 261 S. Fourth street, Philadelphia, Pa.

The American Iron and Steel Association has completed a 1910 supplement to its well-known directory to the iron and steel works of the United States, all information being brought down to March, 1910. The supplement gives complete lists of new plants built and new companies organized since the appearance of the 1908 directory, also the most important changes in offices and officers of firms and companies that have taken place in that time. It also contains complete lists of Bessemer, open hearth and crucible steel and steel casting works; iron and steel rails, structural shapes, wire rods, skelp, plates and sheets, black plates and tinplates, and terne plates. The new features include a complete list of the manufacturers of billets, and sheet and tin plate bars, of muck and scrap bars, of iron and steel merchant bars, of rolled iron and steel concrete bars; and a list of the electric steel works of the country which have been completed or are building or are projected.

Proposed Advance in Rates by Carriers in Official Classification Territory. By Daniel Willard, president of the Baltimore & Ohio.

The testimony given by President Willard at the hearing by the Interstate Commerce Commission at Washington, D. C., on October 13 is published in full in this pamphlet. The testimony when given served to enhance his already great reputation as a profound student and an extraordinary clear and able expositor of railway problems. Reading of the pamphlet will leave fully as deep and lasting an impression as the hearing of it did. No better statement ever has been made of the things that are needed to raise credit of American railways to, and keep them on, a firm foundation and to bring about needed improvement and extension of their facilities.

Letters to the Editor.

MARVIN HUGHITT.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The account of the career of Marvin Hughitt, lately president and now chairman of the board of directors of the Chicago & North Western, in the issue of the *Railway Age Gazette* of October 28, is a splendid tribute; but it omits one strong and important characteristic of his business career. Those who have been privileged to come into closer relations with him in the business of the great corporation of which his has been the guiding hand for more than a quarter of a century have always been lifted into a higher and purer atmosphere when in his presence by reason of his recognition of the guiding hand of the Creator of the universe over the affairs of men. His power to remove the tension from the members of his official staff in times when care and anxiety made the load heavy to carry, by a word of assurance based on the care of the Almighty for His creation and creatures, was marvelous.

Times are changing, and the time is approaching when the story of the career of a man of his noble type in the press and periodicals will contain some reference to this feature of such a character, and it would seem appropriate that the story of the career of Marvin Hughitt should be rounded out with such a reference. His influence for good, reaching as it does from the cyclonic disturbances in the Stock Exchange in Wall street to the roundhouses along the lines of the North Western system, is a testimonial to this element in his high character.

ONE WHO KNEW HIM WELL.

REPORTING REVENUE ON EXCHANGE TICKET ORDERS.

Montreal, Que., November 12, 1910.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I was glad to see that the above subject was dealt with on page 834 of the *Railway Age Gazette* of November 4. I believe that a reasonable discussion of the subject through your columns, if you are disposed to open them for such a purpose, will be productive of good, and will, most likely, tend to facilitate a settlement of what at present appears to be a somewhat involved matter.

The method of settlement for exchange ticket orders which has been in effect for many years past has become unreasonably burdensome to certain lines, and it is small wonder that they sought relief from the conditions with which they have to deal. Unfortunately, the remedy which has been suggested is about as bad as the disease, and does not do away with the trouble.

It is high time that the lines which have been in the habit in years past of drawing exchange ticket orders on their connections should make a change, and place on sale an interline issue of tickets that will properly take care of the business offering at the stations and ticket offices along their lines. If this is done it will automatically place the accounting for the business where it belongs.

Traffic and accounting officers of some of the lines, which have in the past been drawing exchange orders in large numbers, are taking action along the lines I have mentioned, and if others can only be induced to do the same thing, the accounting for exchange ticket orders will soon be settled in the proper way. Otherwise, the matter will probably drift along until a delegation goes before some state, province or interstate commission, and complains that modern carriers are using ancient ticket orders, and as soon as an inquiry is addressed to a few lines by an officer of a commission we shall be treated to the humiliating spectacle of a lot of railway officials trying to remedy (just before, or immediately after, they are told to do so) an abuse which has been steadily growing, and for which no remedy has been found, because up to a comparatively recent date no strong protest has been made.

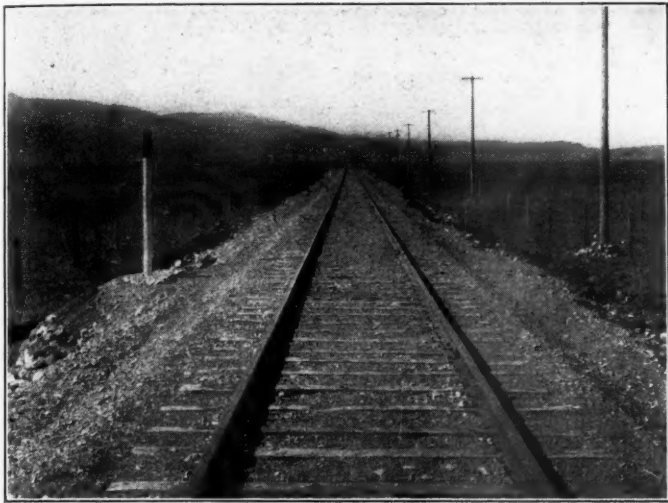
J. H. SHEARING.

Auditor of Passenger Receipts, Canadian Pacific.

THE IDAHO & WASHINGTON NORTHERN.

In building to the Pacific coast the big transcontinental lines have reached out into adjacent territory wherever possible to secure additional tonnage. An occasional section, however, has been overlooked, and it is such an instance that gave the builders of the Idaho & Washington Northern an opportunity to tap one of the richest timber belts and mining districts in the far West.

As shown by the accompanying map, the I. & W. N. serves the Spirit valley district, a section heretofore entirely without transportation facilities, and the Pend Oreille river valley, which has had only steamer service, and that for but a portion of the year. This entire district contains valuable timber lands, some



Completed Roadbed.

of the finest stands of white pine to be found in the West being located in these valleys. The lower Pend Oreille district is among the largest cedar producing regions in the world and has long been known for its cedar poles. In the Spirit valley one company owns 750,000,000 ft. of standing timber. Large, modernly equipped sawmills have been built at Spirit Lake, Idaho, and Ione, Wash., each having a daily capacity of 250,000 ft. In addition to these, there are 27 sawmills located along the line of the I. W. N., having a total output of 1,500,000 ft., all of which tonnage naturally will flow to this line. In addition to the lumber interests, which will furnish such a large tonnage, the Pend Oreille valley contains between 60,000 and 70,000 acres of rich agricultural land well suited for development in dairy and hay ranches. At Metaline Falls, the point to which the road is now being extended, a large cement mill is being built. Inexhaustible deposits of clay, lime and shale, combined with cheap electric power developed from the waters of Sullivan Creek, will give this mill command of the entire cement market in the Spokane country. The mill will have a daily capacity of 2,000 barrels, and expects to begin operation early in 1911. Another important source of tonnage will be the Metaline silver-lead mines, located on both sides of the Pend Oreille river surrounding Metaline Falls. There will also be a considerable tonnage of brick and tile products from the large clay deposits in the Pend Oreille valley. It will thus be seen that the new road has ample tonnage assured.

The I. & W. N. has experienced an exceptional passenger traffic since the opening of the road, tapping as it does districts heretofore without transportation facilities. Many valuable homesteads are being taken up along the valley and the population is increasing rapidly now that transportation facilities are available. In addition to the settlers and homeseekers, the summer resorts reached by the road have proven quite a factor. Twin Lakes and Spirit Lake, which are numbered among Spokane's most beautiful resorts, are but 33 and 43 miles from Spokane, respectively, and have proven very popular, many

summer homes being built and resulting heavy commuters' traffic. The I. & W. N. controls the Pend Oreille Navigation Company's line of steamers, which formerly operated between Newport and Ione. Regular service on the river was discontinued upon the opening of the I. & W. N. to Ione, but Sunday excursions to Box Canyon during the summer months have been continued in connection with the I. & W. N. from Spokane, and the patronage of the past summer has been such that the capacity of the steamer was taxed to the limit allowed by the United States marine laws.

From McGuire's Station, a point in the Spokane valley 22 miles east of Spokane, Wash., the I. & W. N. passes in a northerly direction through Spirit valley, 43 miles to Newport, Wash., thence northward down the Pend Oreille valley, 51 miles to Ione, the present terminus.

From Grand Junction in the Spokane valley the company has trackage rights for passenger trains over the Spokane-International Railway entering Spokane, where the depot facilities of the O. R. & N. company are utilized. The Spokane-International handles the freight business between Spokane and Grand Junction. The Chicago, Milwaukee & Puget Sound is now building its line between Cœur d'Alene and Spokane. This line will be completed during the fall of 1910, and the I. & W. N. will then connect with it at McGuire's, and through trackage rights for both freight and passenger trains will be had over the new line into Spokane, and the new Union depot will eventually be used as a terminal.

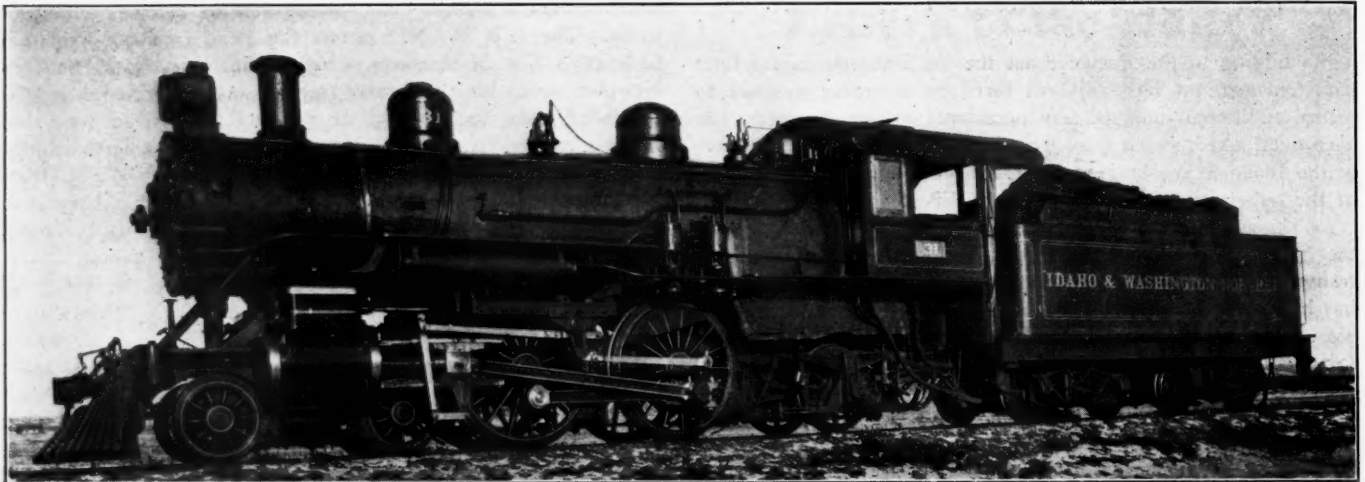
The Idaho & Washington Northern was incorporated under the laws of the state of Idaho, March 25, 1907, and actual construction was begun April 1 of the same year at Clagstone Junction, from which point on the Spokane-International material and supplies were received. Owing to the large amount of railway construction then going on in the northwest, it was decided to utilize the company's own forces rather than wait for contractors. Not one foot was contracted, either in bridge work or



Passenger Station.

grading, and so rapidly was the construction work carried forward that the road between Grand Junction and Newport was completed and in operation, and regular passenger and freight service installed, November 25, just eight months from the date of incorporation of the road. The completeness and thorough construction of the roadbed was such that the first passenger trains made 35 miles per hour, including stops.

The I. & W. N. roadbed is ballasted throughout with a minimum of 8 in. of first-class gravel and is laid with 75-lb. rails, A. S. C. E. section, Wolhaupter rail joints, with tie plates on curves. No engineering difficulties were encountered between McGuire's Station and Newport, the maximum grade being 1 per cent. and the maximum curvature 6 deg. The alinement



Atlantic Type Locomotive; Idaho & Washington Northern.

has an unusually large percentage of tangent, which is exceptional in the location of railway lines in this part of the country.

In 1908 surveys were made for the extension of the I. & W. N. northward from Newport to Ione, a distance of 51 miles. Actual construction was begun during the spring of 1909, and train service was inaugurated through to Ione on November 8, 1909. From Newport northward the road follows the west bank of the Pend Oreille river, and the construction was found to be much heavier than that encountered south of Newport. For a distance below Newport the earth formation is clay, with layers of quicksand. Some trouble was experienced from slides in cuts and in finding bottom for trestle piling. Several timber trestles were found necessary north of Newport varying in height to 80 ft. and in length up to 1,500 ft. The longest trestle crosses a bay or arm of the river, and, as difficulty was experienced in reaching bot-

tom, the number of piles per bent was increased to 14, running from 60 to 80 ft. in length. No trouble has since been experienced. The maximum grade between Newport and Ione is .3 per cent., and the maximum curvature is 3 deg. The construction of this portion of the road also necessitated a 1,100-ft. tunnel at Blueslide.

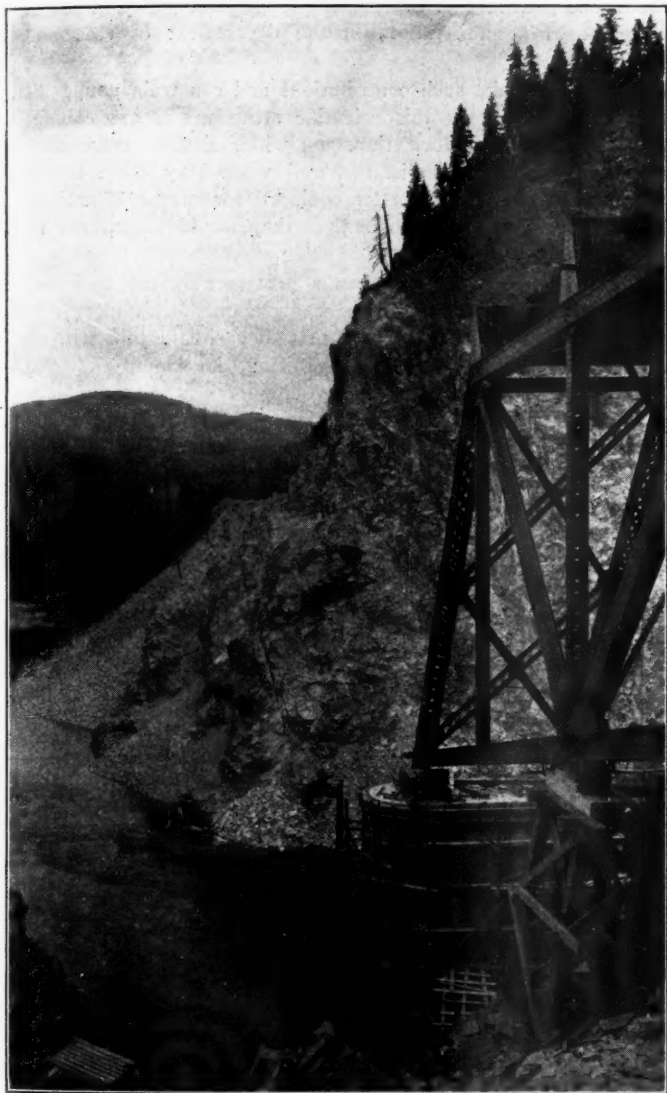
Work on the Meteline extension, a distance of ten miles from Ione northward to Meteline Falls, is now being pushed to completion and entails the heaviest construction of the entire line. At the lower end of Box Canyon two miles north from Ione the road is to cross the Pend Oreille river on a steel bridge 500 ft. in length, 140 ft. above the surface of the river, consisting of a first span of 145 ft.; main span, 280 ft., and an 80-ft. girder.

The bridge is being constructed with deck span and by the cantilever method because the character of the river and walls



Pend Oreille River Bridge; Idaho & Washington Northern.

of the canyon make false work impossible. The trusses of the main span are 50 ft. in depth and 22 ft. center to center. The first, or 145-ft. span, which is composed of five panels, four 28 ft. 3 in. long and one 32 ft. long, rests on a reinforced concrete base. The advantages of cantilever construction for erecting the 280-ft. span. was obtained by tying back the span to the 145-ft. span by means of temporary eye-bars and placing a distributed weight of about 450 tons of railway steel upon the latter to act



Construction Work.

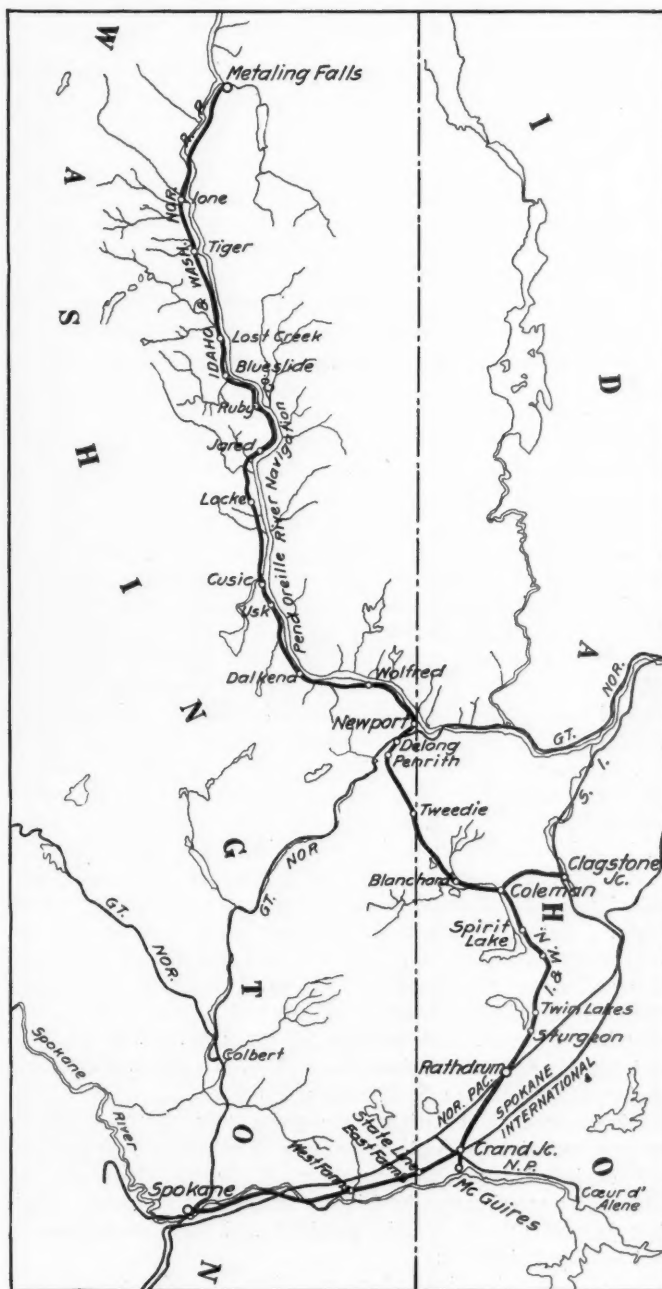
as a counterbalance until the main span reaches the pier on the opposite side of the river. The bridge will cost about \$100,000. The work of erecting the bridge started July 10 and was completed about October 1.

The construction work from the canyon northward is also heavy and includes the boring of two short tunnels and the building of four trestles, ranging from 40 to 110 ft. in height, and up to 1,000 ft. in length. The grade from the canyon northward is now nearly completed, and as soon as the steel bridge is finished the road will be completed to Metaling Falls in a very short time, probably by November 1.

At Spirit Lake, Rathdrum and Newport separate freight and passenger depots have been built, the latter being of brick and surrounded by attractive grounds or parks. Commodious buildings of uniform design have been built at all other stations, with the idea of comfort and convenience for the traveling public. This idea has also been carried out in the road's equipment. It could hardly be expected that a railway built primarily for the tonnage of forests and mines would have the best in passenger

equipment, yet the I. & W. N. coaches are six-wheel truck, 85-ft., full-vestibuled cars, with seating capacity for 88 persons, interior finish of mahogany, lighted by the Bliss axle lighting system and built by the Pullman Company. The passenger engines used are ten-wheel and Atlantic types. Freight engines are consolidation type, with 22 in. x 30 in. cylinders, and the freight equipment is all of 80,000 and 100,000 lbs. capacity.

The company's shops are located at Spirit Lake, Idaho, and are complete and modernly equipped. They consist of a nine-stall roundhouse, with 75-ft. steel turntable; a machine shop, 70 ft. x 210 ft.; store house, 42 x 124 ft.; paint shop, 45 ft. x 108 ft.; blacksmith shop, 40 ft. x 97 ft., and a ten-pocket gravity coal chute. The shops were built and equipped by Westinghouse, Church, Kerr & Co. With the exception of the coal chute, which is of frame construction, all the buildings are of brick, with concrete foundations. All the machines are of the latest type and are driven by individual electric motors. The entire area of the machine shop is served by a ten-ton, three-motor traveling electric crane. The power for the shops is supplied from an outside source, being 3-phase, 440-volt current. The operation of the air compressor is controlled automatically



Idaho & Washington Northern.

and the motor set requires practically no attention, the result being that the services of an engineer are dispensed with, and the machine is watched and cared for from the tool room.

The roundhouse is equipped with a complete system of protection against the consequences of runaway or carelessly handled engines. At the end of each roundhouse track near the outer wall is a depressed stop. At a distance of 20 ft. from the turntable end of each roundhouse track is a derail automatically operated by the turntable lock, being normally closed. The act of locking the turntable for any track automatically opens the derail for that track. This device is from a design by the present general manager of the road.

The position of the I. & W. N. is unique in that it is not a feeder for any one of the big lines exclusively, but that it is entirely independent and has traffic agreements with all five transcontinental roads reaching the Spokane country. As will be seen on the map, it connects at Newport with the Great Northern, at Clagstone and Grand Junction with the Spokane-International, at Rathdrum with the Northern Pacific, and at McGuire's with the Cœur d'Alene division of the Spokane & Inland Empire Electric Railway.

The executive officers of the I. & W. N. R. R. are located at Spirit Lake, Idaho, and the traffic department officers are at Spokane, Wash.

We are indebted to R. F. Blackwell, vice-president and general manager of the Idaho & Washington Northern, for material and illustrations for this article.

RAILWAY EDUCATION IN ILLINOIS.

A movement which may have an important influence on education for railway work in Illinois was started by a trip made to the University of Illinois at Urbana by a party of railway officers at a meeting held there November 9. The party making the trip was organized by F. A. Delano, president of the Wabash. W. L. Park, vice-president and general manager of the Illinois Central, furnished a special train which took the party from Chicago to Urbana and back. The party included the following: F. A. Delano, president, and C. W. Litsey, chief clerk to president, Wabash; W. L. Park, vice-president and general manager; M. K. Barnum, general superintendent of motive power; A. S. Baldwin, chief engineer, and H. Battisfore, superintendent, Illinois Central; R. H. Aishton, vice-president, and J. W. McEachern, Chicago & North Western; H. G. Hetzler, president, Chicago & Western Indiana; E. C. Field, vice-president James of the university presided, and made an address, in W. A. Nettleton, general superintendent motive power, and W. J. Tollerton, assistant general superintendent motive power, Rock Island Lines; L. C. Fritch, chief engineer, Chicago Great Western; E. D. Bronner, superintendent of motive power, Michigan Central; J. Q. Van Winkle, general manager; G. P. Smith, chief engineer, and Wm. Garstang, superintendent of motive power, Big Four; F. A. Lehman, assistant to vice-president, and A. F. Robinson, bridge engineer, Atchison, Topeka & Santa Fe; S. T. Park, superintendent of motive power, Chicago & Eastern Illinois; S. M. Rogers, vice-president and purchasing agent, Elgin, Joliet & Eastern; F. H. Clark, general superintendent motive power, and A. W. Newton, general inspector permanent way and structures, Burlington; C. F. Loweth, superintendent and engineer of bridges and buildings, and L. R. Clausen, superintendent, Chicago, Milwaukee & St. Paul; W. W. Ryder, general superintendent of telegraph, and A. R. Ayers, mechanical engineer, Lake Shore & Michigan Southern.

After arriving at Urbana the party was shown over the campus and given special opportunity to inspect the agricultural and engineering work being done at the university. In the afternoon a meeting was held in the engineering building. President James of the University presided, and made an address, in which he said in part:

"We do not imagine, of course, that we college professors can settle the great practical problems which you railway men,

for example, have to face from day to day, but we are quite sure that we can make some contributions by the scientific study of these phenomena in the midst of which you are at work which will be of assistance to you in the solution of these problems. Just as Professor Talbott is, by his investigations into the habits and qualities of reinforced concrete, every day adding something to our knowledge which is of use in the structural part of your business, so we believe that by similar patient, careful, scientific study we may be able in the long run to add something to the means you have of determining a scientific policy in the department of administration, in the department of rate making, etc.

"If we can make such contributions and can train young men so that they will get this scientific attitude and are equipped with this scientific information, you will find them more useful and more helpful as assistants, and when they come to take your places they will be better equipped for the great problems which they will have to solve than they would be without this training.

"Twenty-five years ago, when a professor in the University of Pennsylvania, I urged very strongly upon the leading railway men in the city of Philadelphia that they should join with the University of Pennsylvania in organizing, developing and maintaining a great school of railway engineering and administration for the study of the scientific side of those underlying principles upon which the highest type of successful practice and efficiency must be based, whether consciously or not.

"They were kind enough to consider the matter at some length, but as one of the Pennsylvania Railroad men said: 'There is no such thing as a science in rate-making. Our only problem is to get the largest possible return under a given set of conditions, considering our colleagues of the same railway, considering other railways, considering the public along the lines, considering the lines through the rest of the country, considering the attitude of investors domestic and foreign.'

"My reply at that time was: 'My dear sir, if it is true that there are no principles underlying rate-making which can be ascertained and made the subject of study and consideration, if it be true that the attitude of every individual rate-maker and of every individual road is simply to get the utmost return out of the community, then of course the wildest kind of crazy so-called defender of the rights of the people or the rights of shippers has just as good stand in the court of reason as the most careful, thoughtful, and conservative railway official. Such a proposition is a confession of bankruptcy on the part of railway administration and railway officials which will surely call forth in the long run such a revulsion of sentiment in the public mind as to bring about a crisis in the whole business of railway development, operation and administration.'

"I believe my prophecy is coming true. There is no branch of business more important than that of transportation. There is no department in which the interests of more people are fundamentally involved, and no system of administering this great department of transportation can be successful or satisfactory which does not try to ascertain the great underlying principles upon the basis of which investors, railway administrators, shippers and consumers may find, if not complete satisfaction—owing to their conflicting interests—at least a basis for a reasonable understanding.

"Some people think that the present railway system is going to break down and that our only solution is government ownership and operation. Even if that were true it would not change or alter in the slightest degree the necessity of the development of this kind of a center of investigation and research and training which we have in mind, for of course the government would break down absolutely and completely in a comparatively short time if it did not have trained men, if it did not insist on trained men to do this important work.

"The achievements of the railway men in the United States in the last generation have been remarkable. I do not believe,

for my part, that any set of men of any nation could have brought about more astonishing or better results under the conditions than the men who have had control of our railway system. But conditions are changing very rapidly in such a way as to affect every aspect of the business, and we must change our method of training men for the service of the railways in the next generation if our successors are to solve these railway problems even as well as we have done."

President Delano spoke very briefly, saying that he and other railway men in Illinois were much interested in the future of the university. Those in charge of the university, he said, are the trustees of public property, and all the people of the state are concerned in the use of the moneys spent by it. Illinois has the largest mileage of railways of any state in the union except Texas, and they pay 10 per cent. of the total taxes collected in the state. They are interested in what use is made of the money, not only because they contribute so much of it, but also because they have a special interest in what the citizen of tomorrow is going to be, and, therefore, he felt that the railways should do all they can to hold up the hands of the university authorities.

Edward C. Schmidt, professor of railway engineering, talked on "The University Work in Railway Engineering," telling of what has been done and what it is hoped to do.

Professor Arthur N. Talbott spoke on "The Work of the University in Materials Testing, and Its Relation to the Railway Interest." Professor Talbott said in part:

"Since the engineering experiment station was established research work along the line of materials testing has been done by the laboratory of applied mechanics, and much of this is of interest to railway men—in fact, a considerable amount has been done in coöperation with railways. The extensive work in reinforced concrete, investigations in which the attempt has been made to develop the principles upon which this new form of construction depends, is probably known to those of you who are interested in reinforced concrete work, and a very large field remains unexplored. As illustrations of work applicable to railway construction may be mentioned the tests of concrete piles, both the rolled pile and the molded pile, which are now being used by the C., B. & Q. and the C. & N. W., and other railways, and also the field tests of the large slabs of beams of reinforced concrete which were used by the Illinois Central in the construction of the subways at Grand Crossing, Ill., constructions which by reason of their newness required special attention to give knowledge of their properties. The extensive tests of culvert pipe, both cast iron and reinforced concrete, were participated in by the St. Paul, the Burlington, the Illinois Central, the Santa Fe, and the Rock Island. The use of timber in wooden trestles is a different problem from that of 20 years ago, and the tests of timber stringers made here have given desirable information on conditions now existing. These tests were made possible through the coöperation of the Illinois Central and the Rock Island. The Burlington, the Wabash, and the Illinois Central assisted materially in the tests of steel columns, the latter furnishing an engine, train and crew for eight days. It is believed that these tests throw an important light on the action of bridge columns under load and that the new method of testing brought out is of importance to the engineering profession. After having tests made on steel columns embedded in concrete, the Wabash reinforced towers of two of its steel trestles with concrete coating. An investigation of the new process of welding by the oxyacetylene flame has shown in an independent, impartial way the advantages and limitations of this process—in a manner which may not be expected by the promoters of the process. A bulletin describing the results will soon be printed. In hydraulics an extensive series of tests was made on all the forms of locomotive water columns in use in this country, in coöperation with the Maintenance of Way association and the Big Four, and it is of interest to note that the form of water column or standpipe in most general use by the railways was the one giving the highest loss of head, a loss that was ridiculously high. It may be worth adding that these manu-

facturing companies are at work remedying the defects, as they ought to have done long ago. Among other tests of interest to railway men may be mentioned those of car couplers, boiler stay bolts under repeated reversals of stress, truck bolsters, car wheels, wire rope over sheaves, track spikes, tie plates and ties, and the transmission of pressure through earths and ballasts.

"Enough has been said to show that the University of Illinois may be of service to railways. What I want to suggest is that with proper support the university may be of much greater service to you. Although the first province of the university is to give instruction, it also has a great opportunity to be of public service to the community. The editor of a great engineering journal has recently written me urging the importance of having in every large district of manufacture and trade a competent, authoritative and absolutely impartial institution of tests, public and of recognized authority, where manufacturer, purchaser, dealer and consumer may go to get tests and information, and where research and investigation may be carried on. Part of this work would be in the interest of scientific knowledge and part directly in the interest of the one having the work done and being paid for by him, as in the case with the great Prussian testing station at Lichterfelde. With our great industrial development the need for such an institution is increasing. My correspondent urges that as Illinois has made the first step in establishing the engineering experiment station, it would seem fitting that the work be broadened and that Illinois should also develop a great public testing laboratory. Evidently the opportunities for public service are numerous. It means, however, larger facilities and more resources for men and operation. The crowded condition of our quarters is apparent, but we are trying to do the best we can with our present arrangements. I hope, however, that we may continue to be of service to the railway interests and that ways will develop by which we may do more. Having been in the railway service, I feel that I can appreciate some of your problems. Your new problems arising every day will be of more importance than those already solved, and the University of Illinois wishes to be helpful in making their solution."

Dr. David Kinley, dean of the School of Business Administration, spoke on "The Courses in Railway Administration and Accountancy," saying in part:

"Hitherto the greatest problems of railway development have been problems of construction; today they are problems of organization and management. Before, they were engineering; now they are administrative. This statement does not minimize the importance of new construction, nor of the engineering difficulties involved; nor does it leave out of sight the important problems of maintenance. It simply emphasizes the fact that the minds of railway managers today are busy with problems of organization and administration, especially in their connection with finance.

"This is not a peculiarity of the railway situation. All businesses, especially those organized in a corporate form on a large scale, are feeling the necessity of an improved organization, of better understanding and integration of costs and income, expenses and revenue, and also a more definite statement of their relations to the public. In all industrial lines the American people in the past have had so much elbow room and such rich resources that there has been a large margin for waste and indifferent management. Till recently we have all lived, so to speak, in a régime of economic plenty and license. It is hardly worth while to save a penny if the saving of it costs two. Our railways have had their share in this economic ease, although, of course, to railway men that time is a long forgotten past!

"Now they are face to face with serious problems of adjustment to a public opinion which no longer views with patience the loose management which it has permitted, if not encouraged, in the past; and railway men are therefore hard at work trying to adjust their organization and financial conditions to this new point of view. They find themselves perplexed at times to meet the demand for additional taxes in the face of an even louder

demand for a reduction of rates and the control of rate-making by a semi-public body. They are wondering how they can organize traffic so as to reduce costs; how to adjust rates so as to invite traffic at these reduced costs, and to find a sufficient margin between expenses and income to keep their plant from deteriorating, furnish a little for extensions, and pay something at least in the way of dividends to clamoring stockholders. In short, the great questions, or rather some of them, are concerned with better accounting, better organization of traffic, better operation of trains—meaning by 'better' in each case reduced cost, improved service, and larger net income.

"Obviously such problems can be met most successfully by those who have been trained in the sciences which underlie these matters. I would not depreciate in the slightest degree the skill and knowledge born of long practice alone. But if it is possible for new men to anticipate experience, and through education to solve some problems with less empirical experimentation, it will be an advantage.

"I am aware that there are some who insist that it is impossible for the universities to train young men for the kind of service needed. If by 'prepare' we mean that a young university graduate can be turned out ready to be entrusted with the duties of the general manager or treasurer, the head accountant or the traffic manager, or positions of similar responsibility, all university men will admit at once that it cannot be done. If, however, we mean by 'preparation' imparting a knowledge of the scientific principles underlying those administrative duties, and some knowledge of present organization and methods, I believe that it can be done. The question really amounts to this: Is it possible to give a young man an education which will make him immediately valuable to a superior officer because he has some acquaintance with the principles and organization of that superior officer's business, and also has been trained to logical processes of working and thinking? I think the answer is yes.

"What kind of training will do this? The matter of primary importance, of course, is training in judgment and power to think. The student must be taught how to handle a mass of data on a given subject so as to present the facts in their proper relations and show what they teach. He must be able to make correct inferences or to present the data so that his superior officers can do so. The ability to do this implies both good judgment, logical power, and at the same time a sense of discrimination of the relative importance of the various facts, as well as some knowledge of the character of the data. In other words, it is possible to train a student to study a problem of administration, arrange the factors involved in it, and make a solution. Training of this kind will stand him in good stead when new problems are presented in railway work.

"A second part of the training needed to make a young man early valuable in railroading is knowledge. He may get a power of logical thinking, a discriminating judgment, as a railway man once said to me, from the study of Greek roots. It is far better for him to get it from the study of subjects which at the same time give him as much knowledge as possible concerning the matters he is to think about. In other words, it is possible to train a railway student to think correctly, while at the same time giving him some knowledge of rate-making, so that at least he will be able to tell a commission or the public what the principles are on which a system of rates may be made up, even though he may not be able to explain a particular rate.

"The heart of the work of the student of railway administration is in social and industrial economics, theoretical and applied, and in accountancy. The knowledge of general economics is fundamental. It must be followed by a study of applied economics relating to such subjects as costs of production, industrial and corporate organization, methods of wage payments and other labor matters, and in accounting, both general and as applied to railway problems. The young man needs to be trained on the side of social economics, to a better knowledge of taxation, the study of markets, routes of trade, materials of commerce, possible sources of industrial development to supply

traffic, and many other things of similar character. This implies a study of public and private finance, the relation of government to railways, methods of regulation and control, and the mutual duties and obligations of the railways and the public.

"Certain it is that the difficulties of today and tomorrow in the life of railway men are questions of policy, internal and public. The men who can best grapple with them will be men trained in the principles of sciences that underlie policies. Therefore, it is to the interest of the railways as well as to the interests of the public to do what they can to promote the proper training of young men who are in the future to occupy the positions that you fill today."

D. C. Buell, director of the educational bureau of information of the Union Pacific, described this bureau, the work it is doing and the results it has been getting. The bureau and its work have been fully described in past issues of the *Railway Age Gazette*. Professor H. H. Stoek spoke on "University Extension Work through Miners' and Mechanics' Institutes," and Dr. W. F. M. Goss, dean of the College of Engineering, made an address, pointing out the need for enlarging the facilities of the university. He said in part:

"The College of Engineering has 1,300 students enrolled. It has graduated 1,500 men, and there are more than 2,000 others who have been members of classes that have graduated. Forty-three per cent. of all the students in attendance at Urbana are enrolled in the College of Engineering. More than half of the men who are enrolled as students in the university belong to this college.

"The college, except for its department of physics, has had no appropriation for buildings since 1894. In the sixteen years which have since passed the attendance of students has doubled, and a similar expansion has taken place in every direction; its instructional staff has doubled, the number and variety of research problems which are undertaken have vastly increased, and the work of instruction has been extended to meet the legitimate demands resulting from the progress of the arts. Notwithstanding all these developments the increase in buildings has been meagre, chiefly in the form of shedding, which could be supplied from the small sums which from time to time could be saved from the funds appropriated for maintenance.

"At the present moment the College of Engineering, disregarding its building for physics, boasts of a total of 125,000 sq. ft. of floor space. This is nearly three acres, but it amounts to only 100 sq. ft. per student for all purposes. Compare this with one of the colleges of Oxford, for example, with Magdalen College which has twelve acres of buildings and 180 students, or an allowance for all purposes of more than 3,000 ft. per student. Similar comparisons with the better institutions of our own country will suffice to demonstrate the crowded condition under which the students of the College of Engineering of the University of Illinois do their work. You have yourselves seen something of the important work Professor Talbott is doing in materials testing and you can readily appreciate the disadvantages under which that work is now proceeding because of lack of room. You will also, I am sure, sympathize with me in the desire to have the youth of the state enjoy facilities whereby they may receive instruction along lines of importance to the transportation interests of the state. We need greatly to increase our facilities for testing rails, air brake equipment, fittings and fixtures of every sort in car construction. We need a locomotive testing plant by the use of which students may become familiar with the action of one of the most common and at the same time one of the most important machines the world has ever seen. Without the testing plant we can do nothing in this line. We need facilities for testing electric motors and cars, and all the various details of electric fixtures employed in the construction of railway equipment. We need room sufficient to permit us to handle certain track and signal problems which cannot now be entered upon, and we should make a beginning in formulating instruction involving the more scientific aspects of aerial flight.

"As I look out upon the field of engineering in this state of

Illinois and study the various activities which engage the attention of its people, I discover that nearly one-fourth of all the people in the state are dependent upon the transportation interests for their support. This fact coupled with the knowledge that our state is second among all the states in the Union in its railway mileage, convinces me that our college can not better serve the state than by emphasizing the scientific and technical aspects of the great transportation industry, by instructing students to understand the problems of the railways, and by promoting research, the results of which will add to the efficiency in the operation of railways. Now the question I want to ask is whether this interpretation is a fair one. If you think it is not a fair one, then of course it would be folly for me to attempt to develop it, and a frank statement from you to that effect will permit me to turn my attention to other lines offering greater promise. If, on the other hand, you think my interpretation is a fair one, then I shall be glad to do what I can to persuade our trustees to place this matter before the legislature. There would be of course no disposition to disturb you or to annoy you with small matters in our campaign with the legislature. We only ask that we may know what your convictions are on the subject which I have presented, and that you stand ready to express these convictions if the occasion arises when it would seem desirable for us to have you do so."

At the conclusion of Dr. Goss's talk, W. L. Park moved that the meeting adopt a resolution expressing it as its sense that the railways of the state should cooperate with the president and trustees of the university in getting the legislature to make such appropriations as may be necessary to enable it to enlarge its facilities and faculty adequately to fit men for railway work. R. H. Aishton, vice-president of the Chicago & North Western, seconded the motion, saying that the railways have come to recognize the fact that educational training is necessary to increase the efficiency of men already in their service, and that special education and training to fit men for that service before they enter it is even more necessary. The resolution was adopted. As the railway men present were there as representatives of their lines appointed by their presidents, this made certain that the railways of Illinois will vigorously cooperate with the university authorities in their efforts to get the desired legislation.

For several years special instruction has been given at the university in civil engineering and the mechanical engineering of railways. In further recognition of the importance of this work there has recently been established a School of Railway Engineering and Administration, under the direction of which there are now given courses designed to train men for service in the financial, operating and traffic departments, as well as in the engineering departments of steam and electric railways. Five courses are at present offered: in railway civil engineering, railway mechanical engineering, railway electrical engineering, railway transportation and railway traffic and accounting.

The university has excellent laboratory and other facilities for carrying on this work. The instruction is also facilitated by the cooperation of the three steam railways and the electric inter-urban road which enter Urbana, with which most cordial relations exist. The Engineering College owns and operates two test-cars, one for steam roads and the other for electric roads, in addition to which all other resources of the College of Engineering, the School of Commerce and the Engineering Experiment Station are available for the promotion of this work.

The attendance at the College of Engineering has increased as follows:

Year.	Men.	Women.	Total.
1903-04.	801	4	805
1904-05.	843	9	852
1905-06.	953	8	961
1906-07.	1,101	7	1,108
1907-08.	1,182	5	1,187
1908-09.	1,244	6	1,250
1909-10.	1,297	6	1,303

Fifteen hundred have been graduated; 2,000 others have been students in the classes that have graduated; 43 per cent. of all students in Urbana are in the college.

TEST OF JACOBS-SHUPERT FIREBOX.

Safety in transportation, and safety appliances of all kinds for the conservation of life and property, are receiving much attention at this time, so that any new invention involving elements of greater strength and safety than previous ones of the same class is of special interest. The test of the Jacobs-Shupert firebox, made by the Santa Fe, at Topeka, Kan., on September 26, 1910, under the direction of H. B. MacFarland, engineer of tests, is of interest in this connection. This type of firebox was described in the *Railway Age Gazette* of May 28, 1909, page 1123.

In April, 1909, a Jacobs-Shupert firebox was completed and placed in freight service on a Santa Fe type locomotive. It has given good service and has demonstrated all the claims made for it so far as evaporation, efficiency and low cost for repairs are concerned. The results of its performance have justified its application to 32 engines now in active service and 66 engines on order. The fireboxes in service have demonstrated so thoroughly and so satisfactorily the claims made for this form of construction that it was deemed advisable to demonstrate whether or not they would stand the severe stresses, without the usually disastrous results that occur with fireboxes of ordinary construction, when the water is lowered below the crown sheet and the crown sheet is overheated. A further object was to determine whether extreme pressures occur when cold water is injected into a firebox with an overheated crown sheet. Ordinarily the claim is made that an explosion occurs only when cold water is injected, although Professor Thurston, who was an authority on the subject of boiler explosions, stated that only once was he able to produce an explosion by the injection of cold water into a highly heated boiler. He stated, however, that explosions from this cause were more frequent in locomotive than in stationary boilers.

In an ordinary firebox the strength of the crown sheet with its numerous stays is very much reduced when overheated. On account of increased temperature the holding power of the staybolts is decreased 65 to 75 per cent. The result of an increase of stresses in the metal due to temperature changes, in addition to the stresses due to usual boiler pressure, together with the decrease in the holding power of the staybolts, causes the crown sheet to be forced from the staybolts. The sheet once opened is at the mercy of all the latent energy of the boiler, with the consequent collapse of the interior of the firebox. The test was made to demonstrate that the Jacobs-Shupert firebox was of a substantially safe construction for high pressures and such unusual conditions of service.

Firebox and Boiler.—The Jacobs-Shupert firebox selected for the test was originally applied to the boiler of one of the Santa Fe type engines, but has been in stationary service since November, 1909. As shown by the illustration, it is a large firebox and boiler, being capable of evaporating 50,000 pounds of water per hour in road service. The dimensions, heating surface and proportions are as follows:

Boiler and Firebox.		
Total length, ft.	39	
Height, ft.	11	
Weight, lb.	75,000	
Capacity, cu. ft.	722	
Water capacity, gal.	4,350	
Water space, cu. ft.	580	
Steam space, cu. ft.	142	
Pops, number	3	
Flues.		
Number	373	
Outer diameter, in.	2.25	
Thickness, in.	0.125	
Length, ft.	19.5	
Total fire area, sq. ft.	4,098	
Firebox.		
Sections, number	11	
Length, inside, in.	109.6	
Width, inside, in.	79.5	
Depth, front end, in.	76.7	
Depth, back end, in.	76.7	
Volume, cu. ft.	359.7	
Fire area, sq. ft.	60	
Thickness, inner section, in.	0.313	
Thickness, outer section, in.	0.5	
Heating surface, sq. ft.	265	

Boiler.	
Number of rings.....	3
Diameter of first ring, in.	88
Diameter of smallest ring, in.	77
Thickness of shell, in.:	
First and middle rings.....	0.9375
Third ring	0.875

The characteristic feature in the construction of this firebox is the elimination of all staybolts on the crown and side sheets.

eighty yards away. Oil was used for fuel, and a special valve was introduced so that it could be shut off quickly.

The usual working pressure of these boilers is 225 pounds, and the pops were set as close to that as practicable. No provision was made for carrying away the steam generated, except by allowing the boiler to blow off. Compressed air was piped to the stack to produce sufficient draft to maintain combustion

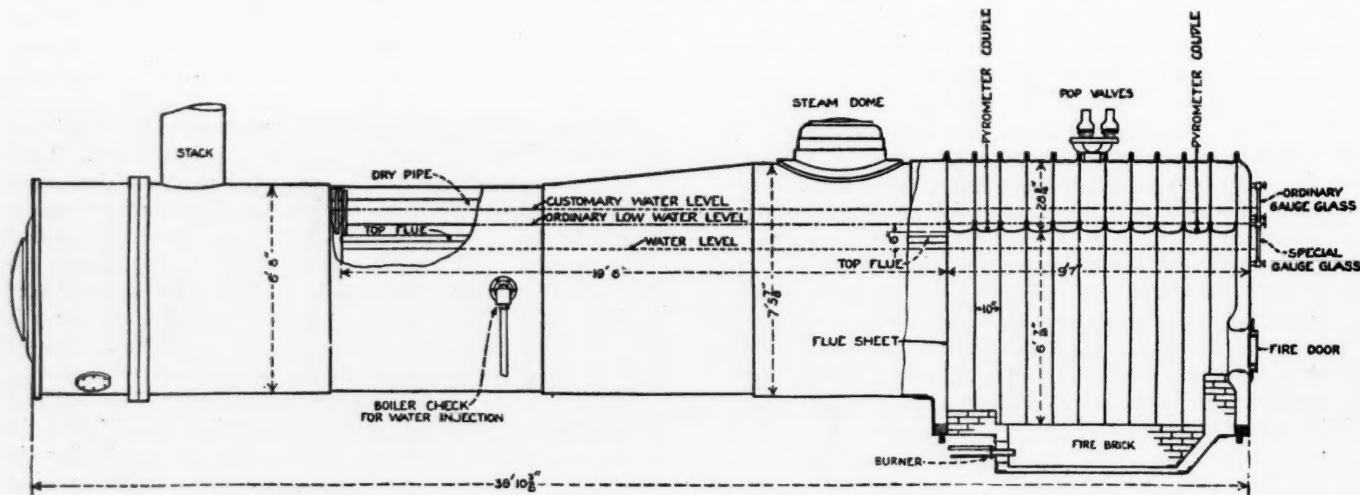


Fig. 1—Diagram Showing General Arrangement of Boiler and Location of Testing Apparatus.

The firebox in process of construction, ready to rivet, with one outer section in position is shown in Fig. 3; another view, Fig. 4, plainly shows the large openings in the stay sheets for water circulation. The interior of the firebox nearly completed, Fig. 5, shows the great amount of heating surface free from staybolt heads. The sectional construction provides for the expansion of the arches so that enormous stresses may not be set up by great changes in temperature. The sections are supported by stay sheets, properly perforated to allow for the horizontal circulation of water and steam. The stay sheets are shielded from the fire side of the box and are thus protected from the action of the active flames.

Preparations for the Test.—The test was made on one of the largest boilers, with no special changes except for the purpose

and keep up the pressure. Two pressure gages were used so that one might check the other. A lever was connected to the blow-off of the boiler, so that it could be operated from a point near the pump, in order that the water might be lowered in the boiler. A second or special gage glass was attached to the boiler head to indicate the level of the water relative to the top of the crown sheet during the test.

Two pyrometer couples were inserted in the steam space of

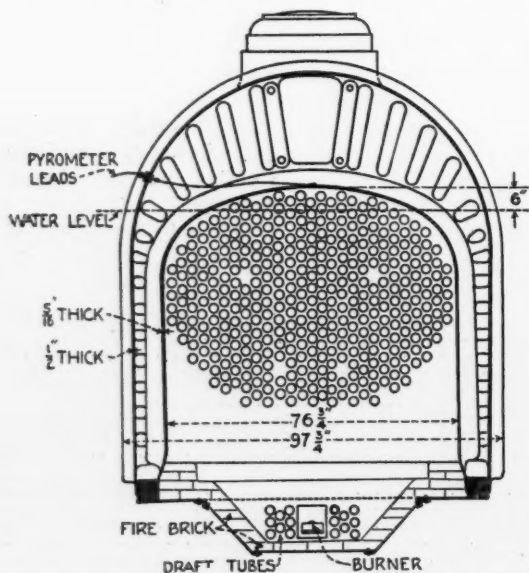


Fig. 2—Cross-section of Boiler through the Firebox.

of record, and under conditions that might occur in service. The boiler was set up, as shown in Fig. 6, at a point north of the Topeka shops, and sufficiently removed so that in case of an explosion the least possible danger to life and property might result. Water was forced into it by a pump, to the left and

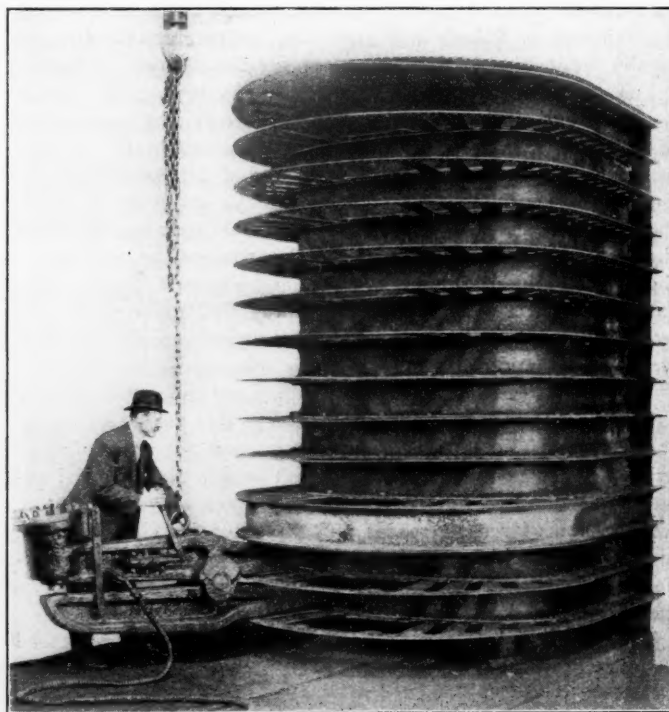


Fig. 3—Jacobs-Shupert Firebox in Course of Construction.

the firebox with leads extending to a proper shelter, where temperature readings were made. The pyrometer couples were placed in the second sections from the back and the front of the firebox, and indicated the temperatures of the crown sheet on the steam side. The line of projection of the lower portion of

the crown sheet was painted on the back head of the boiler, as shown in Fig. 7. The location of the gage glasses, pressure gages and pyrometer leads are also shown.

A position of safety was provided for witnesses of the test, such that the water levels and gage pressure could be seen with the aid of field glasses and telescopes. Observers taking read-

sion as representatives of the government to witness the test.

Test.—A hot crown sheet test was made on the morning of September 26, 1910, between six and seven o'clock. The boiler had been fired up for some time previous to the test, and the pops were registering intermittently with the boiler pressure at 225 pounds. The water was lowered until it showed only one inch above the crown sheet, when all the witnesses, except two, retired to a distant place of observation. The water was

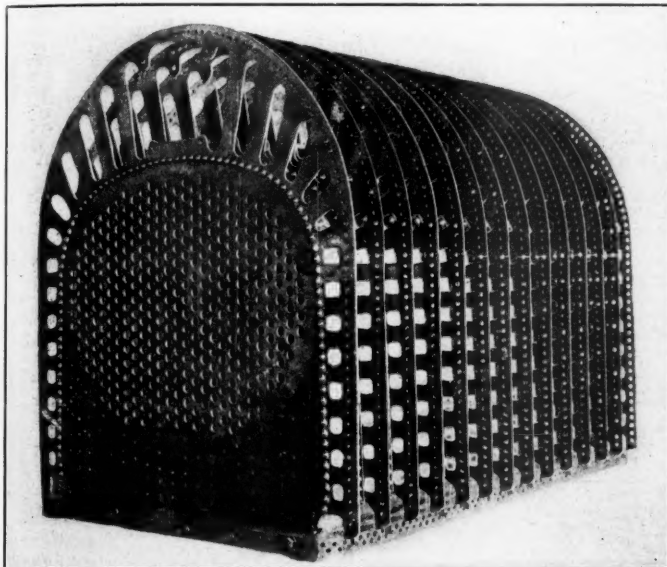


Fig. 4—Another View of Firebox in Course of Construction.

ings were provided with a steel shell, placed on a flat car a little to the left and back of the boiler head. This shell was cabled to the track and braced so as to eliminate, as far as possible, the element of danger in case of explosion. A photograph, Fig. 8, taken immediately after the test, shows the boiler, the oil tank supplying oil for fuel, and the protection shield used by the engineer of tests and his assistant, who took observations during the test. The leads from the pyrometer couples are shown entering the door in the shield, while the temperatures on the top of the crown sheet were indicated on the pyrometer placed on the floor, directly before the observers. E. L. Gibbs, inspector of safety appliances, and Frank G. Ewald, an inspector of the Interstate Commerce Commission, were present on this occa-

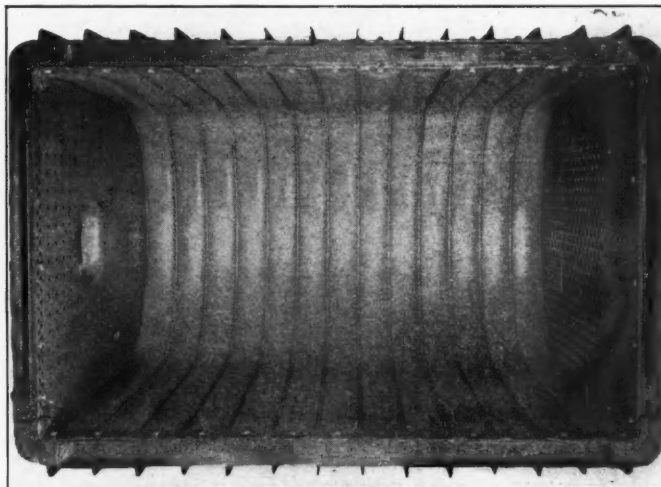


Fig. 5—Interior of Jacobs-Shupert Firebox nearly Completed.

then lowered until it was level with the top of the crown sheet. During the period of the lowering of the water the safety valve popped continuously and the boiler pressure was maintained constant.

The water was blown off to 4 in. below the top of the crown sheet in three minutes, and at the rate of 1,210 pounds per minute. Two minutes after the crown sheet was bare the firebox showed the effects of expansion due to the heating of the crown sheet, by very slight openings in the stay sheets near the middle of the firebox. The leaks from these openings were slight and would not be considered of any consequence in ordinary service. The reason for the opening of these stay sheets was due to the construction, which allowed them to be butted

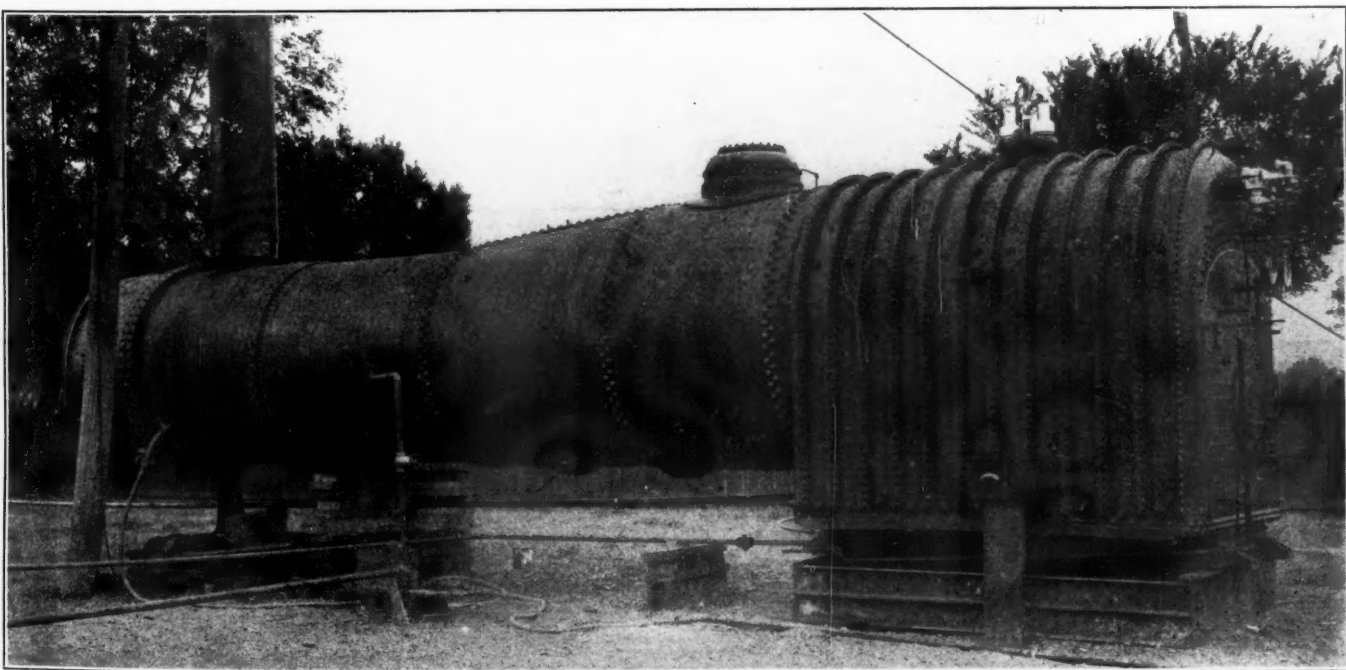


Fig. 6—Boiler Ready for the Test.

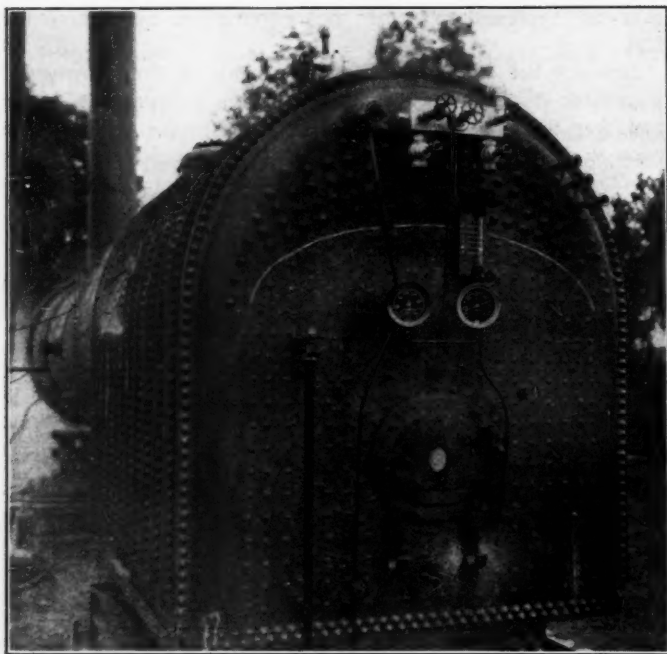


Fig. 7—Boiler Under Test with Water 4½ In. Below Top of Crown Sheet.

together instead of being formed from one piece, as is the present practice.

The crown sheet heated up gradually at an average rate of 67 deg. per minute for a period of ten minutes, at which time the temperature of its front section was 1,125 deg. Fahr., and at the back section was 1,065 deg. The pressure as shown by both gages was 230 pounds, although all the pops were blowing off. The water level was 6 in. below the top of the crown sheet. In Fig. 7 a photograph is shown, taken a short time after the crown sheet was bare, with the water level showing 4½ in. below the crown sheet, and the gages standing at 225 pounds pressure. The pops were blowing off at that time, and the photograph also shows a slight steam leak occurring a little below the pyrometer leads. Toward the end of the test, when practically all of the crown sheet was bare and a large amount of hot metal was exposed, the steam from the blow-off was considerably superheated.

Ten minutes after the crown sheet was bare, and it had been

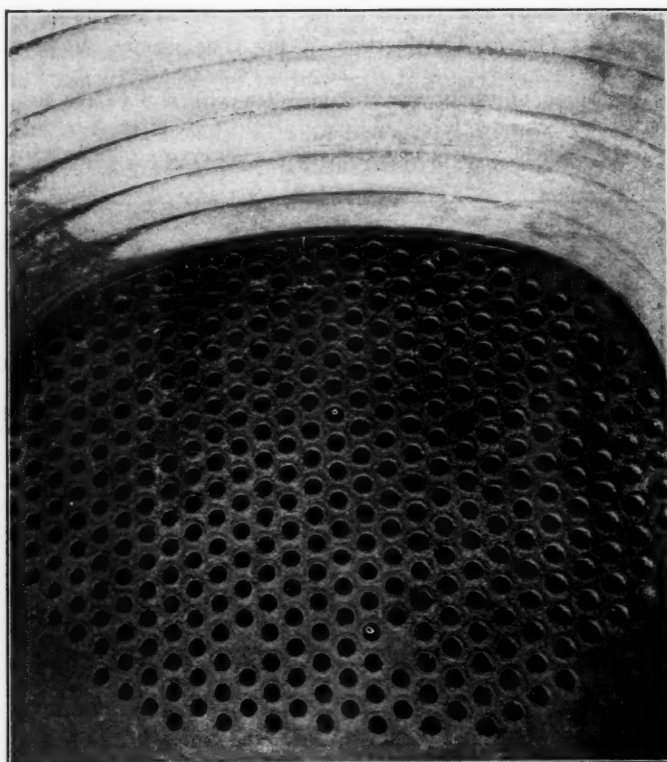


Fig. 9—Flue and Crown Sheets After the Test.

heated to a temperature of 1,125 deg., water at 60 deg. was forced into the boiler. The fire was cut off at this time, as it was not deemed advisable to continue it with the exposed crown sheet during the period of filling the boiler with cold water. Simultaneous with the injection of the water into the boiler the pressure dropped a few pounds and the water fell in the lower gage glass so that it was not visible.

Several witnesses approached the firebox when the water was still 3 in. below the crown sheet and observed that the crown sheet was still red. Eight and one-half minutes after the pumps were started the water was at the crown sheet, the pressure at that time being 215 pounds. Within fifteen minutes after the close of the test the interior of the firebox was inspected by George Austin, general boiler inspector, Santa Fe System; Frank W. Shupert, boiler foreman, and others. They reported

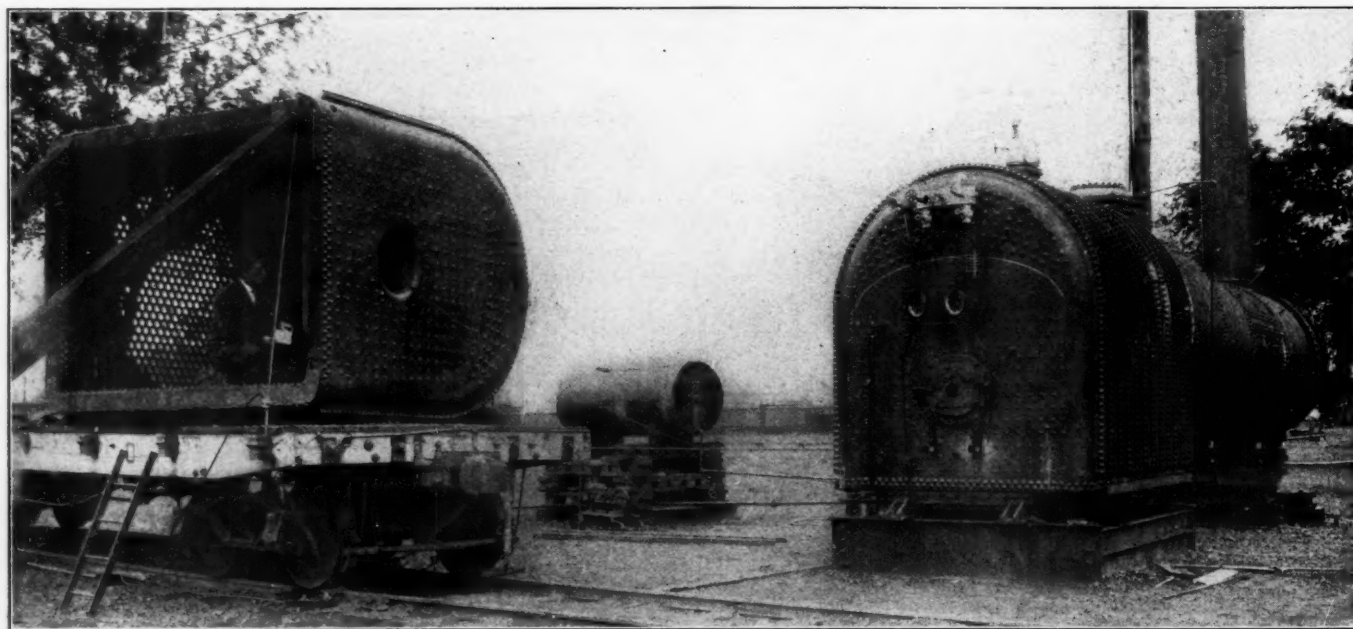


Fig. 8—Boiler After the Test Showing Location of Fuel Oil Tank and Protection Shield.

no distortion of sections nor opening of seams, but indications of an overheated crown sheet, such that in a firebox of ordinary construction would cause a dangerous explosion.

Observations.—The following observations of temperature, pressure and water level were made during test:

Time.	Actual Temperatures.		Pressure Gage Readings.	
	Front.	Back.	Right Gage.	Left Gage.
6:43 a. m.	440	395	225	223
6:45 a. m.	540	495	225	223
6:46 a. m.	740	630	225	223
6:48 a. m.	860	845	225	223
6:50 a. m.	1030	995	225	223
6:51 a. m.	1055	1030	225	223
6:52 a. m.	1115	1060	230	230
6:53 a. m.	1125	1065	230	230

Distance of Water Below Crown Sheet.—4 in. at 6:43 a. m.; 5 in. at 6:47 a. m.; 5½ in. at 6:50-30 a. m.; 6 in. at 6:52 a. m.; 6 in. at 6:53 a. m. Oil valve shut off at 6:53 a. m.

Results of Test.—As soon as the boiler cooled down sufficiently the water was removed, the boiler dismantled and the fire pan removed. Three hours after the test had been concluded the boiler was turned over, and an opportunity was afforded for a more rigid inspection to determine its exact con-



Fig. 10—Partial View of Crown Sheet After the Test.

dition. Several photographs were taken to show the condition of the sections and that portion of the crown sheet that was overheated, as well as the condition of the flues and flue sheet. The whitened portions of Figs. 9 and 10 show the parts of the crown sheet that were overheated during the test.

Close examination of the sections showed no distortion due to overheating in any portion. There were no leaks between the sections and no flue leaks. An inspection of the interior of the boiler on top of the crown sheet showed the characteristic blue color that accompanies the overheating of a crown sheet. The intensity of the color increased towards the center of the sections, showing that the temperature was much higher at the central portion than at sections where the pyrometers were located.

The boiler tubes, as may be noted from Fig. 9, were not inserted in the back flue sheet in the usual manner, but were welded in by the oxy-acetylene process. The diagrams, Figs. 1 and 2, show the general dimensions of the boiler and the location of various pieces of apparatus during the test. On these diagrams the customary water level is shown as well as the ordinary low water level, which indicates the danger point to the engineer. A line has also been drawn to show the actual low water level as recorded during the test when the water was 6 in. below the crown sheet. By reference to the cross

section it will be seen that eleven tubes were entirely out of water, while eight were only slightly in contact with the hot water.

Deductions and Conclusions.—As a result of the test, and experience with locomotive fireboxes of ordinary construction, the following deductions and conclusions were drawn:

The Jacobs-Shupert sectional firebox is stronger than an ordinary locomotive firebox with the sheets held together by staybolts. The overheating of the crown sheet of the Jacobs-Shupert firebox does not decrease the holding power of the staybolts and rivets, owing to the protection afforded by its being shielded from the flames. The ordinary firebox with its numerous staybolt heads fully exposed to the intense heat of the flames has its strength reduced sixty-five to seventy-five per cent., due to the overheating of a crown sheet in case of low water in the boiler. The Jacobs-Shupert firebox is not subject to undue stresses, due to changes in temperature, because of provision being made for free expansion of the individual sections. Its form of construction gives protection from explosion and consequent danger in case of the water being below the crown sheet and the crown sheet getting red hot. Its form of construction is such that in case of rupture the firebox will not be entirely torn apart, as results with ordinary fireboxes, thereby causing a dangerous explosion. The firebox was subjected to a pressure, temperature and low water test, such as would have caused a violent explosion in case of an ordinary firebox.

THE INDIANA "RAILROAD CONVENTION."

The third Annual Indiana Railroad Convention (managed by the State Railroad Commission) was held in Indianapolis, November 9, 1910. About 100 superintendents, enginemen and conductors were present. Chairman Wood of the State commission welcomed the railway men to the convention and stated that its object was to consider the conservation of man by the prevention of accidents. He referred to the death of Elmer Reeves, a member of the second annual convention and chairman of the committee to supervise the accident reports. Mr. Reeves lost his life when his engine was derailed.

The "Prevention of Accidents" was the subject of an address by A. M. Schoyer, general superintendent of the Pennsylvania Lines West of Pittsburgh, Northwest system. Extracts from this address are given in another column.

"The Conservation of Men" was the subject of a talk by Ralph C. Richards, general claim agent of the Chicago & North Western. Mr. Richards said that while it was commonly thought by the public that the greater number of injuries and deaths resulted from collisions and derailments, the railway officer knew that from ten to fifteen times as many were caused in the same length of time by what are termed, "little accidents," or accidents in which one employee was killed or injured at a time and about which the public learned little. The best way to reduce railway fatalities, said Mr. Richards, was to employ good men and then educate them for the duties of the service. It is folly to make rules against certain practices on the part of employees, and then sit by and watch the rules violated time after time without offering to discipline the men for infraction.

Mr. Richards spoke of the block system and the installation of safety devices, but declared that the first requisite was the choice of men. Choose good men and then see to it that they are educated to the work of obeying the rules of the road and the law of the land. It is unjust to criticise the roads for employing old men and foreigners. Old men, many of whom have become incapacitated for their work, are given places as watchmen and they are far more reliable than younger men. He spoke a good word for the foreign born employee; they are faithful and reliable. The companies cannot afford to provide pensions to take care of their aged men and so have to place them at crossings. Men from 60 to 70 years old give good service in that line.

At the request of Chairman Woods Mr. Richards explained the North Western's plan of organizing committees of safety to

save the lives of employees. The loss of a brakeman or other employee means something to a railway. A new man must take his place and this increases the hazard to other employees. He advocated a department to employ men and a rigid plan of educating them to do the work assigned. It takes less time to prevent an accident than to make a report of it afterwards.

The "loan shark" in his relation to railway men and railway safety was discussed and with one accord denounced. He is a menace to the public by preying on railway men who, harassed by his methods, forget train orders, become careless and contribute to accidents. Often they flee to another state, leaving the road short of experienced men. By resolution the railroad commission was instructed to recommend that the next Legislature pass a law to curb the operations of loan sharks.

The matter of accommodation to passengers and the necessity of keeping the billboards in good shape at stations was discussed freely. It was admitted that station agents frequently became careless of their duty, would write illegibly on the boards and become arrogant when questioned by passengers.

The appointment of an advisory board for the year was left with the railroad commission. An interesting illustrated lecture was given at night by Col. B. W. Dunn, of New York, on the best methods of handling explosives for shipment.

MR. SCHOYER'S ADDRESS.

The scientist tells us today that the battle with disease is three-quarters won when its direct cause is discovered. After the germ is located its destruction is inevitable. The same thing must be true with a matter of this kind. To prevent railway accidents they must be analyzed until the main cause has been located, and the efforts of the doctors must be applied to the destruction of that cause.

It is somewhat difficult to locate the germ for accidents to travelers on the highway. This class must be largely due to carelessness on the part of the public, assisted, occasionally, by similar carelessness on the part of crossing men or other railway employees.

In England the traveler on the highway, in his vehicle, approaches a crossing at grade. He finds the way barricaded by substantial gates. There may be no train in sight—and there usually is not—but the vehicle stops and waits until the gate-keeper, usually advanced in years and in a greater or less state of decrepitude, comes out of the house, carefully looks up and down the line, unlocks the gate and lets the patient traveler by. It will make no difference to the gate-keeper that another vehicle is in sight approaching the crossing. The gates are again closed and locked, the gate-keeper again enters his house, and when the next traveler approaches the same procedure is gone through with. If a passenger train be due, whether in sight or not, the gates usually remain down until that train passes, which occasionally is discomfiting when the train is late and the crossing watchman or watchwoman, as the case may be, has not been notified. American travelers would not stand such procedure for a minute. They demand that the gates be up and the crossing open at all times except when trains are passing. In Great Britain and on the Continent the gates are down and the crossing is closed at all times except when a vehicle or a traveler is passing.

On the subject of trespassers one of the common statements is that if the railways of this country were to build walls and fences around their tracks, as is done abroad, there would be fewer accidents. That is true. The railways of Great Britain are surrounded by a splendid and impenetrable wall; that wall is the law of the land. It is a misdemeanor to walk on the tracks. And the law is enforced. There is little or no trespassing on any of the railways there. In this country there is practically no law against trespassing on the tracks. * * * In a large city in a neighboring state a number of men and women were injured, and several killed, while trespassing on the railway in the vicinity of a large classification yard where coal was received. The poor, unfortunate people were endeavoring to augment their winter's supply of fuel from the coal which fell from cars along

the right of way. Warnings were unavailing; removal by force merely resulted in the immediate return of the trespassers or of their relatives, and so it was determined to arrest a few of these persons found in the yards and have them arraigned for stealing coal. What was the result? The prisoners were set free, the railway company paid the costs, and the police officers of the road were notified that if they brought any more persons before the magistrate on that charge they would be imprisoned themselves!

* * * Many accidents to workmen who do not understand English could be prevented by having interpreters who can talk to them and show them the dangers, and by a more thorough course of education of the green men employed; also by better supervision. In other words, if we tell the men what we expect, how to take care of themselves, how to do the work and then see that they do it, undoubtedly we shall greatly reduce this very prolific cause of accident.

The carelessness of the employee is a matter with which we have to deal. What causes it? Take one of the smaller causes of accident, the so-called boiler explosions. Every year scores of men practically commit suicide or manslaughter because they will not obey the rules which prohibit dependence on the water glass or because they forget the matter of water for the boiler, or because they recklessly take chances. Only one thing can kill this "germ"—require absolute obedience to the rules.

The railway companies are increasingly careful as to safety appliances, partly due to the stringent national and state laws and partly to their own initiative. Safety appliances on cars and switches, stations and shops, are more carefully looked after and more uniform in character than ever before. The railways are adopting block systems almost universally. Some roads are adopting expensive lock-and-block systems. Others are adopting the almost equally expensive automatic system. There is, however, a simple block system which is, in the judgment of the speaker, applicable to most roads and which is less expensive, namely, the single-track block (simple manual) system as outlined in the rules of the American Railway Association. These rules are so clear, so easily understood and so readily enforced that they can be put into effect anywhere with splendid results.

* * * There is a mistaken idea that the most expensive systems must be used everywhere * * *.

Another "ounce of prevention" can be used by the railways in the original choice of men. There are times when the pressure of business is felt and the need of additional men to handle the business is burdensome, when railway officers feel inclined to let down the bars and employ all applicants. When this is done, it is followed, sooner or later, by accidents which, if carefully investigated, could clearly be shown to result from the choice of improper men. The pressure of "organization" is undoubtedly felt by many roads in this matter, thus limiting their choice of men. It is essential to the safety of railway operations that the choice of men should be unrestricted, and that the greatest care should be exercised by the companies, who are alone responsible to the public. After these men are employed they must be educated carefully and painstakingly, they must be shown how to perform their duties, and they must be trained in the rules and regulations and examined in them; and then, the right men having been chosen and educated, after thorough and proper examination, the great work of discipline commences; and this is where the railway company must again use the greatest care.

The railway organizations of the men are usually called "brotherhoods." Being brothers, they feel that they must stand by each other, and feeling that they must stand by each other, the effort of the organization is to see that its members retain their positions, or having been discharged or suffering severe penalties for violation of rules or neglect of duty, that they be reinstated or that the penalty be lightened. The quarterly and annual reports of many of the leading brotherhoods contain long lists of men who have been reinstated in their positions or whose penalties have been lightened by reason of the efforts of the

brotherhood. One of the greatest causes of accidents in this country today is the interference with discipline on the part of organizations or of others. Every time a man who is responsible for an accident has had his sentence shortened or has been returned to duty after being discharged, by reason of the interference of his brother employees or his organization, or of others, it is inevitable that other accidents of a similar nature will occur—not by the action of that employee, but through the negligence of others who will be led to feel that they can successfully neglect the rules or their duty and be relieved from the results by the strength of the organization or friends behind them.

The railway organizations have done great things for the morals of the men, and the character of the men has been improved by them. Without organizations, probably, many injustices would have taken place in the way of pay or conditions, which at the present time do not exist. But when an organization attempts to interfere in the matter of discipline or attempts to cause the companies to review their disciplinary action, carefully taken after accident or infraction of rule, then they are interfering with the safety of the public and of their fellow employees; and such interference should not be tolerated. * * *

GRAPHIC COMPARISONS OF TONNAGE.

BY F. A. PARKER.

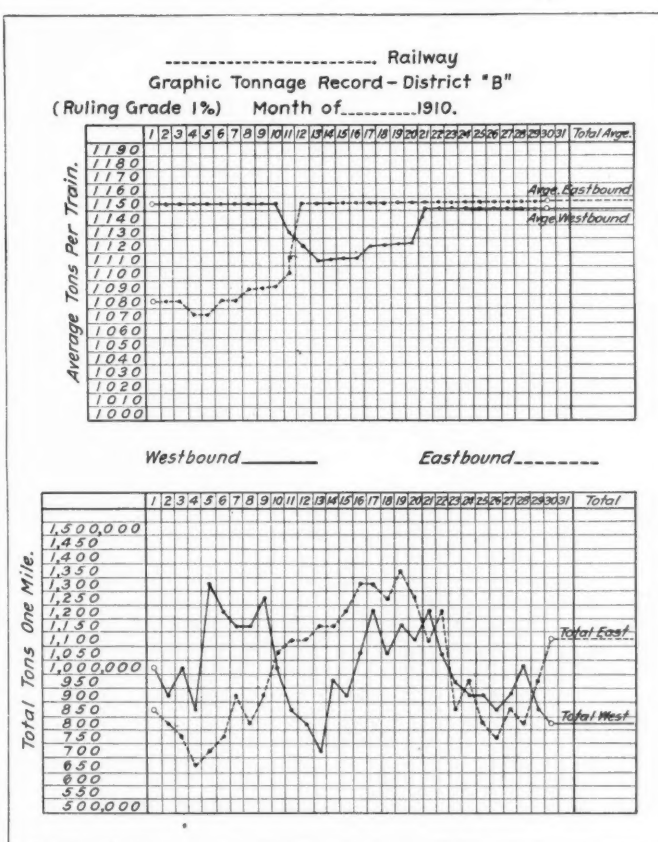
On nearly all trunk lines and particularly on certain districts a constant change of varied extent and time interval between turning points is taking place in the direction of business. For example, on district "B" for the first week of the month we moved 25,000 tons one mile westbound, against only 20,000 tons eastbound, while on the next week the direction of business reversed, as was likewise the case during the third and fourth weeks of the month; all of which sums up to the fact that this district suffered a variation of about 20 per cent. between the directions of business all the month; and, obviously, grades being equal both directions, engines were running 20 per cent. light all the month to balance power. The monthly statement, however, will show for the above example that practically equal gross tonnage was handled in each direction. Explanations of low tonnage per train and consequent increased cost of train service are naturally in order, but unless an explanation can be presented which will readily appeal to the comprehension of a Missourian the case is usually lost.

The above condition also gives the mechanical department a thrust, due to the fact that consumption of coal is computed on both a basis of tonnage per train as well as engine miles and that an engine is burning practically as much coal in balancing power 20 per cent., light as with a full train. The mechanical department then stands open to criticism for a condition over which it has no control and with no data from which to explain. Of course, we can tell them that a boat came in at the Gulf with six trains of bananas, and before we could have returned engines with trains in the natural course of events the second boat was due, and the power to meet the second boat was in a manner necessarily hurried away from traffic which the importance of the second boat would not permit it to remain for, but with no better final result than a cross haul of lights. Again, in another phase, we can tell them that the power to meet a certain day's heavy run of fruit and meat was obviously run away from business in the opposing direction, with the result of another little cross haul of lights. But the mechanical man as well as the average operating man goes away with his head swimming with these explanations, and even if he is convinced (I myself would not be, and I doubt very much if he is) he has nothing to show his superior why cost of train service is so high or why (apparently) an excessive amount of fuel has been used.

This is why a graphical method showing the exact condition of the volume and direction of business by days would be the

most satisfactory explanation which could be given in connection with a monthly tonnage statement.

Regardless of the total ton mileage made in a certain direction on a certain day, that quotient from the total ton mileage divided by total train mileage for that day, compared with a similar computation of the opposite direction, determines the true direction of business. The higher of the above true average tonnage per train is the ruling direction of business. Conditions may be such that for a day or perhaps two days or a little longer the volume of business in the negative direction will possibly exceed that of the ruling direction, and yet the maximum train haul in the desired direction of traffic can be maintained, it being apparent to the director in charge of power that the slight reversal is only temporary and that if the nature of business will permit, and if sufficient power is at hand, the turning point may be overcome without reversing the direction of light power. In the extreme phases of the direction of business we come to a sample of the graphical chart, as shown accompanying this article. The only absolutely correct way to



Graphic Tonnage Record.

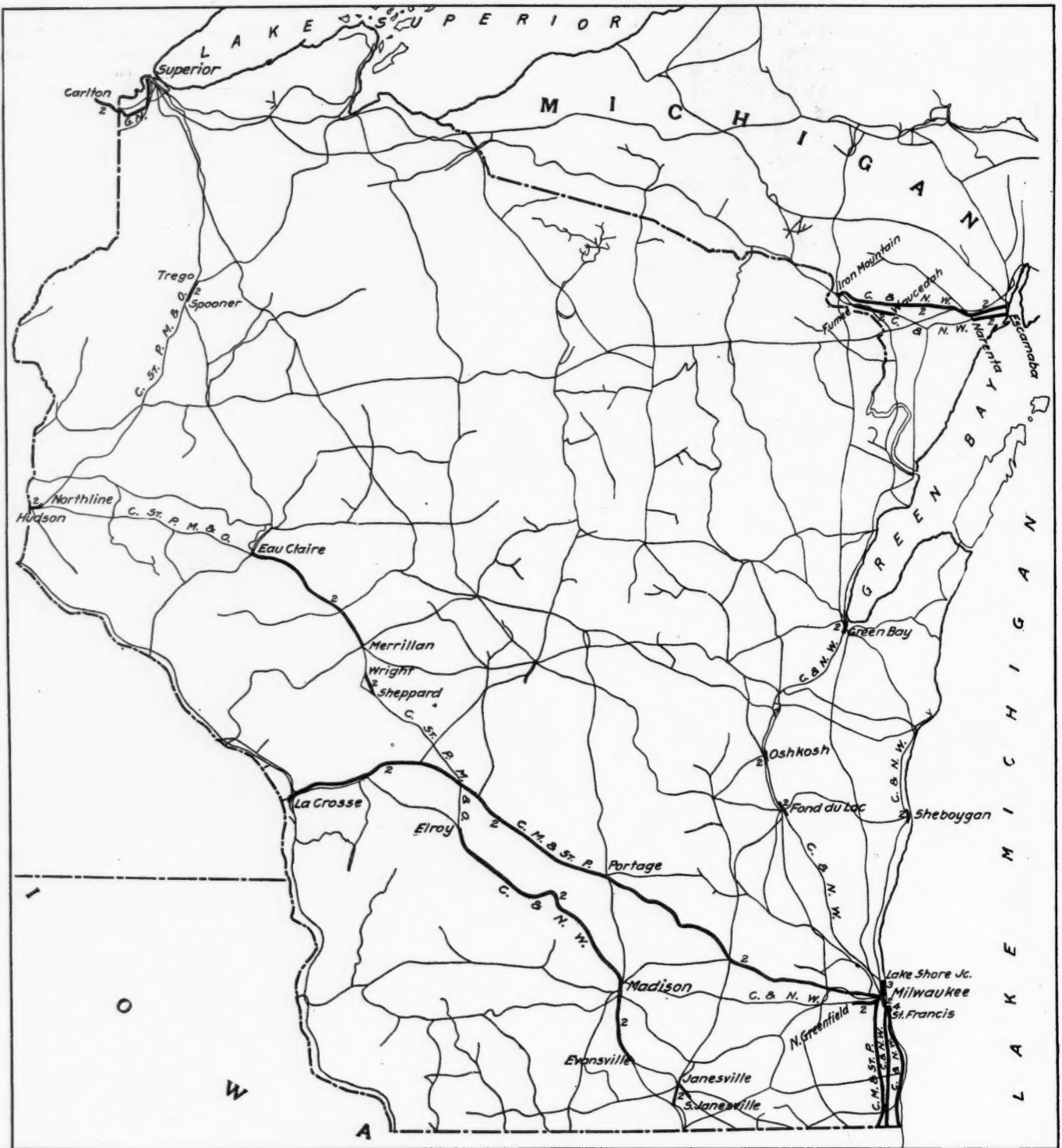
handle the matter would be to have reports from the superintendent of car service, in whose office ton mileage would be computed direct from wheel reports, same as the monthly tonnage statements; but inasmuch as this, together with the monthly statement, would be later than ordinarily desired it would be much more desirable to have the figures computed on the train dispatcher's tally sheets, as in the case of the Rock Island form, on which ton mileage for the benefit of the mechanical department (in comparing coal results with each engineer's record) is made on the train dispatcher's tally sheets. From such a form the total ton mileage, divided by the total train mileage in each direction, equals the true tonnage per train for that direction and can be quickly entered up each day on the graphical chart already prepared, thus reflecting the true condition of affairs day by day. At the end of the month a tracing and blue print of it could easily be made and mailed to the proper officers.

DOUBLE TRACK RAILWAYS IN WISCONSIN.

The railway map of Wisconsin given herewith is printed for the purpose of showing the lines in the state having two or more main tracks. The termini of the several lines as shown on the map are given in the list below. The map also shows the double track lines in the northern peninsula of Michigan, all belonging to the Chicago & Northwestern, as shown below:

WISCONSIN.		
Chicago, Milwaukee & St. Paul.		
	No. tracks.	Approx. miles.
Chicago, Ill., to Milwaukee.....	2	85
Milwaukee to La Crosse.....	2	198
Chicago & Northwestern.		
Including C., St. P., M. & O.		
Illinois State Line to St. Francis.....	2	35
St. Francis to Bay View.....	4	1
Bay View to Milwaukee.....	2	3

	No. tracks.	Approx. miles.
Milwaukee to Lake Shore Jct.....	3	5
Illinois State Line to St. Francis.....	2	35
Janesville to S. Janesville.....	2	5
At Fond du Lac.....	2	5
At Oshkosh.....	2	3
Milwaukee to N. Greenfield.....	2	9
Evansville to Elroy.....	2	97
At Green Bay.....	2	2
Sheboygan Cut-Off.....	2	7
Sheppard to Wright.....	2	44
Merrillan to Eau Claire.....	2	4
Northline to Hudson.....	2	7
Spoooner to Trego.....	2	
Great Northern.		
Superior, Minn., to Carlton.....	2	31
NORTHERN MICHIGAN.		
Chicago & Northwestern.		
Escanaba to Narenta.....	2	9
Waucedah to Fumee.....	2	13
N. Escanaba to Iron Mountain.....	2	51



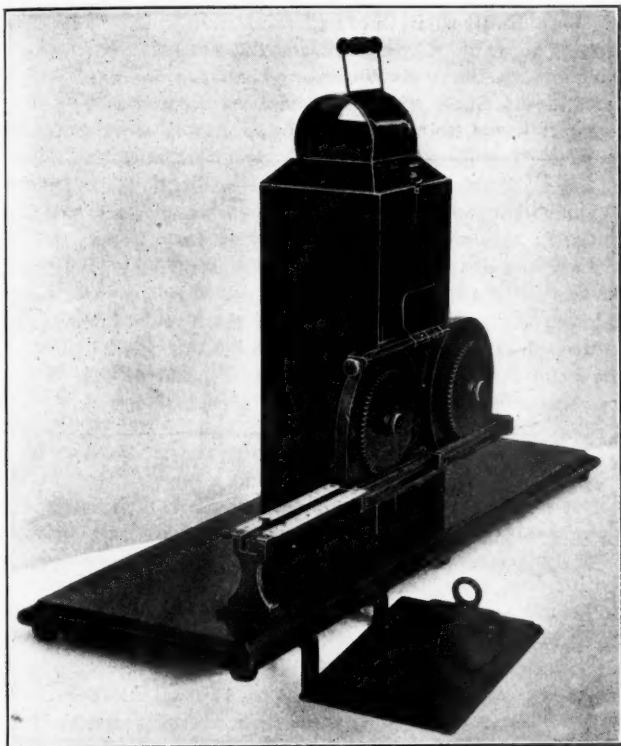
Double Track Railways in Wisconsin and Upper Michigan.

TESTS FOR COLOR VISION IN NEW SOUTH WALES.

BY DR. G. H. TAYLOR,

Medical Officer, N. S. W. Government Railway.

Since 1906 the tests for color sense of candidates for employment in the New South Wales Government Railway service have been Holmgren's wools and Williams' lantern. The retesting of men for color vision on the running lines has been by Williams' lantern alone. Experience having shown that owing to the disks



Eye-Testing Lantern; New South Wales Government Railways.

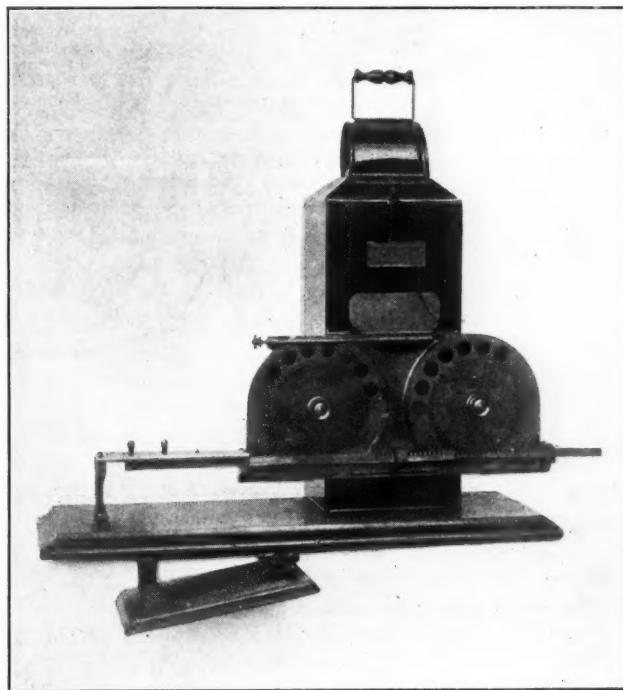
moving in a regular sequence the colors in the Williams lantern could be learned by a person with defective color sense, experiments were entered upon in order to devise some modification whereby any color or combination of colors could be shown at the will of the examiner. As a result of these experiments the lantern shown in the photograph was designed and made by the interlocking engineer of the New South Wales Railways, Charles Wilkin. The colored glasses in the Williams lantern are retained, but by the introduction of a second disk various combinations can be shown at the will of the examiner. The disks are rotated by handles at the side of the lantern. Pointers attached to these handles indicate on a vernier the numbers of the lights shown. The original numbers are retained, so that no alteration has been necessary in the method of keeping the records.

Any method of color testing depreciates in value when it is used to tutor intending candidates, and this is openly done in regard to Holmgren's wool test and the old Williams lantern. It is remarkable how a candidate in whom a defective color sense has been clearly demonstrated, even a defective sense of red, can be tutored in the wools and the old lantern to deceive an examiner. As his sense of shade, however, is never reliable, he may suddenly, after naming correctly a number of red and green disks, name a red, green or white. If examined by a method new to him, detection is not difficult. The key to a candidate's color sense is undoubtedly his sense of green. The smallest degree of defect revealed by the modified lantern is failing to see color in the two pale greens and calling them white. This defect is not invariably confirmed by Nagel. The two pale greens show one with a little more color in it than the

other. When a candidate, with both of them in view names one white and other green, it indicates a more serious color defect. This is, in the cases I have tested, always confirmed by examination with Nagel, the distinction being that the candidate in naming one white and the other green is using his sense of shade and not his sense of color. The conflict of opinion that occasionally occurs in different examinations of a candidate by Holmgren's wools is due in a majority of cases to atmospherical conditions. In an unsatisfactory light a man with a feeble color sense may fail in his green test and satisfy the examiner under more favorable conditions of light. In the Nagel test, which is a severe one, but which could be learned by an incomplete color blind, a good light is absolutely necessary. In a failing light or in gas light persons with normal color sense confuse the gray spots with green. If a candidate confuses red with green or green with red he is recognized by public opinion as a color blind. If he sees no color in red and calls red white, there is also a certain degree of appeal to the ordinary man; but if he confuses pale green with white in the lantern test, or if in matching green in Holmgren's his only mistake is to pick gray or brown wools, the uneducated man is not impressed.

A color blind engine driver is protected from mistake under favorable conditions (1) by his perception of shade, the signal lights used, red and green, being of a standard pattern; (2) by his exact knowledge of the locality of distant and home signals; they are not flashed upon him suddenly; (3) by the color sense of his fireman. In shunting operations, however, where a confusion between white and green may at least imperil the life of a shunter, he must act promptly, guided entirely by his sense of green.

About 12,000 men have been examined in the medical officer's rooms in regard to color sense since my appointment two years



Front View of Lantern.

ago. Of these, 4.92 per cent. were found to have defective color sense; classified as red blind, 2.16 per cent.; green blind, .12 per cent.; incomplete color blind, 1.12 per cent., and feeble color sense, .41 per cent.; and 1.12 per cent. failed only in the lantern, the failures in the lantern being subsequently confirmed by Nagel's method. I am satisfied that a man should not be admitted to the railway service as a worker on the running lines who in any degree has a defective sense of red or green, and

that a man in the service and working on the running lines must be regarded as unfit if it can be shown that he fails to recognize green under conditions that 95 per cent. of ordinary candidates, consisting almost entirely of youths and young men, practically all of them wage earners, and certainly not educated in color in the great majority of cases, never fail to recognize.

No man is rejected whose only error is that he cannot detect green in the two pale green disks of Williams' lantern, this being his only error, and not repeated when he is shown their contrast to two whites.

Prior to the adoption of the modified lantern 42 per cent. with defective color sense not detected by Holmgren's tests were discovered by the old lantern. The new lantern increased the percentage by .7 per cent.

RESULTS WITH GASOLENE SECTION CARS.

Last spring, in discussing the use of gasoline section cars on the Santa Fé and the St. Paul (*Daily Railway Age Gazette*, March 15, p. 556) we called attention to the plans of the Northern Pacific for putting several cars in service. We are indebted to A. M. Burt, superintendent of the Dakota division of the Northern Pacific, for the following account of the results of this experiment during the past summer.

About June 1 three gasoline section cars were put in service on the Dakota division, the cars being assigned to branch lines where the traffic is thin and where there are few obscure curves. In each case two sections were consolidated under one section foreman, the longest section as consolidated being 22 miles and the average 18.3 miles. The section foremen take a great deal of interest in the cars, and it has been quite a surprise to find how few delays occur on account of trouble with the motor. The service record of the three cars for the four months they have been in service, to September 30, is as follows:

	Per car per month.
Amount of delay account trouble with motor.....	32 minutes
Average mileage.....	507 miles
Gasoline used.....	25 1-6 gal.
Gas engine oil used.....	1 1-10 gal.
Estimated cost all supplies.....	\$4.60
Repairs.....	0.00

It is impossible to estimate accurately the saving that has been effected, as we have no accurate measure of the work done per man, but from my observation it seems unquestionable that one foreman and five laborers with a motor car will do fully as much work as two foremen with three laborers each without the car. On this basis the account to date would stand as follows:

Four months' pay of section foreman, at \$55.....	\$220.00
Four months' pay of one section laborer, at \$1.50 per day.....	156.00
Total.....	\$376.00
Less supplies for four months, at \$4.60 per month.....	18.40
Net saving per car for four months.....	357.60

The cars therefore have much more than saved their entire first cost in the four months they have been operated.

The saving shown above is considerably more than we can expect to average the year around on account of the small forces employed during the winter months and also on account of the fact that repairs will have to be considered as the cars grow older. Up to this time no cars have been put in service on the main line, and I am not fully convinced that it is advisable to install them where a heavy traffic is handled on a single track. Eventually we shall probably come to this, but it seems desirable to go a little slow and educate the men gradually.

Some of the incidental advantages of the motor car for North Dakota conditions are:

(1) Better labor supply. In summer we depend largely on Italians and Greeks for section laborers, and they will not work in crews of less than five or six men on account of difficulty in furnishing their own subsistence in smaller crews. This makes too large a gang for the average branch line section, but with

the long sections handled with the motor car crew of this size can be used to advantage.

(2) The men are fresh when they arrive at the place to begin work instead of tired from an hour or more of hard pumping against a Dakota wind.

(3) Small improvements can be handled to advantage by bunching two or three section crews instead of having to use an extra gang, and on occasion men can be concentrated on a weak place at a long distance from section headquarters. One small piece of track laying was done this summer by sending a yard crew 13 miles to help the regular section crew. They were always at work before 8 o'clock and did not quit until 5:15. In another instance a section crew worked for about two weeks helping the adjoining section foreman, on account of very heavy tie renewals and shortage of labor, and this work was done from 12 to 15 miles from section headquarters, with less than an hour's loss of time for the trip in either direction.

To make the installation of motor cars a success it is very essential to have a roadmaster thoroughly interested in the subject. All cars on a roadmaster's district should be of the same make and pattern to minimize the number of repair parts carried and lessen the difficulties in educating the section foreman, and an extra car should be provided and held at the roadmaster's headquarters as a relief car on the same principle as relief engines are maintained for locomotives in regular service.

FOREIGN RAILWAY NOTES.

The report of the chief commissioner of the New South Wales, Australia, government railways and street railways for the fiscal year ended June 30, 1910, shows a total surplus of \$2,761,392, an increase over the previous year of \$486,501. Of the total surplus \$2,538,320 was earned by the railways and \$222,972 by the street railways. For the preceding 12 months the figures were \$1,647,015 and \$384,786, respectively. The gross earnings increased from \$24,436,323 to \$26,660,750, an improvement of 9.09 per cent. The return per average mile open for traffic, after paying working expenses, increased from \$2,833 to \$2,960. The railway mileage open for traffic on June 23, 1910, was 3,643, 17 miles having been added; total expenditures \$237,777,191. Passengers increased from 53,051,556 to 53,644,271, and yielded an increased revenue of \$501,557. Other increases were: General merchandise, 139,025 tons; wool, 6,687 tons; live stock, 27,013 tons; hay, straw, chaff, 29,266 tons. Of coal and coke 1,321,823 tons less were carried, due to the coal miners' strike, but other minerals increased by 53,291 tons. This reduced carriage of coal and coke reduced the total freight carried by 905,891 tons, but the earnings from all sources increased by \$2,222,308. During the last three years 198 locomotives, 288 passenger cars, 2,170 general freight cars, 350 cattle cars and 301 sheep cars have been purchased, and 45 locomotives, 155 passenger cars, 1,136 freight cars, 45 cattle cars and 55 sheep cars are now under order. The street railways have also shown increased profits; 165¾ miles of line were open for traffic at the end of June, and there had been added to the capital expenditure \$2,022,081, bringing it to \$22,680,353. The total earnings amounted to \$5,761,860, an increase of 8.02 per cent. The percentage of expenditure to receipts was 82.96 as compared with 79.77 in 1908-9. During the year 201,151,021 passengers were carried.

The French colonial press finds new cause for enthusiasm in the completion of still another railway leading from the Atlantic to the interior of Africa. The new line, which runs from Konakry, the port of French Guinea, to Kurussu on the Niger, is upward of 360 miles long and will henceforth be the shortest route from the ocean to the navigable Niger.

At the present time freight for Timbuktu, and all the Niger river ports, is landed at Dakar in Senegal, transferred by rail to St. Louis, at the mouth of the Senegal, thence transhipped to Senegal river steamers.

AMERICAN RAILWAY ASSOCIATION.

The fall session of the American Railway Association was held at the Planters' Hotel, St. Louis, Mo., November 16. There were present 198 delegates, representing 159 members. The executive committee reported that the membership now comprises 346 members, operating 252,855 miles of road, an increase of 3 members and 1,416 miles. Associate membership comprises 85 members, operating 4,160 miles, and increase of 4 members and 1,207 miles. The committee further reported that Fairfax, Harrison, Chicago, Indianapolis & Louisville, and H. E. Byram, Chicago, Burlington & Quincy, had been elected members of the committee to fill vacancies.

The committee on transportation presented a report submitting several questions and answers concerning practice under the Standard Code and the standard form of detour contract duly approved by the association. The committee recommended that the detour contract be revised, and the following resolution was adopted: "Resolved, That the charge for detouring movements in which the foreign company supplies its own engines, enginemen and firemen be advanced from fifty cents to one dollar per train mile, and for such movements in which the home company supplies engines, enginemen and firemen the rate be advanced from one dollar to two dollars per train mile; and that the committee on transportation be authorized to make changes in the detour contract necessary to conform to those rates."

The committee on maintenance presented a report of progress, and gave a summary of replies received to circular No. 1024, showing the number of freight cars fitted with air brakes and of engines equipped with power brakes in use July 10, 1910, as follows: "Number of members reporting, 339. Freight cars in service, 2,272,482; fitted with air brakes, 2,251,025; not so fitted, 21,457. Engines in service, 62,250; equipped with power brakes, 62,223; not so fitted, 27. Of new equipment, other than passenger, under contract or construction, freight cars to be fitted with air brakes, 122,296; engines to be equipped with power brakes, 2,103."

The committee on the safe transportation of explosives and other dangerous articles included, in its report, a report from B. W. Dunn, chief inspector to the executive committee of the bureau. The committee also submitted copies of the several circulars issued since the last meeting of the association respecting the transportation of explosives and other dangerous articles. The committee further reported that W. S. Tinsman, Chicago, Rock Island & Pacific, and R. H. L'Hommedieu, Michigan Central, had been elected to fill vacancies on the committee.

A progress report was presented by the committee on electrical working. On the recommendation of the committee on relations between railroads, the association adopted a memorandum for the guidance and information of employees in handling railway business mail. The committee stated that the circular in question was formulated by the Association of Transportation & Car Accounting Officers in conjunction with the Post Office department.

The Chicago, Rock Island & Pacific, the Philadelphia & Reading and the Wabash were elected members of the committee on the safe transportation of explosives. The Baltimore & Ohio and the Chicago Great Western were elected members of the committee on electrical working. C. W. Kouns, Atchison, Topeka & Santa Fe, and J. M. Gruber, Great Northern, were elected members of the committee on nominations.

The association decided to hold its next meeting in New York, April 19, 1911.

Directors of the Lehigh have voted to authorize the listing of Lehigh stock on the New York Stock Exchange. Lehigh is one of the few important railway stocks not heretofore traded in on the New York exchange. The matter has been before the board of the Lehigh for years.

NATIONAL ASSOCIATION OF RAILWAY COMMISSIONERS.

The twenty-second annual convention of the National Association of Railway Commissioners was held at Washington this week, beginning Tuesday morning. Twenty-two states responded at the roll call and about ninety commissioners and other officers were present. Chairman Knapp of the Interstate Commerce Commission, in an address of welcome, called attention to the importance of earnest and intelligent coöperation of the commissioners of each state with those of other states and of all state commissioners with the federal commissioners. Except as such coöperation shall give the country good administration and protect the public from bad practices, the demand for government ownership of the railways and public service corporations will increase. Mr. Knapp, however, expressed confidence that the commissions would "make good," and he recounted the progress that had been made during the past twenty years, or since he first became a member of the federal body. Rebates, passes and other demoralizing practices have been practically outlawed and railway managers have abandoned their former policy of defiance and derision, and now accept governmental regulation as a public necessity.

M. S. Decker, of New York, member of the Public Service Commission for the Second District of that state, and president of the convention, outlined the subjects on which action ought to be taken. He emphasized particularly the need of investigating the whole system of express service and express rates. The question of a parcels post should also be investigated by the commissioners. As telephones and telegraphs are now under the jurisdiction of the Interstate Commerce Commission, the commissioners of the several states should inform themselves fully on the subject. Referring to the radical change that has been effected in rate matters, by which secret rebates are now "as rare as counterfeiting or train robbery," Mr. Decker pictured a still further advance, saying: "Who may say that tomorrow we shall not put in practice through government supervision and coöperation, sought by the carriers themselves and fully sanctioned by the force of public sentiment, methods of rate construction under which many of the great problems that now perplex us will almost magically disappear?" Mr. Decker also strongly urged the extension of the same methods of inspection and supervision of boilers over many states, which he declared, would result in much saving of life.

The committees on railway statistics and on simplification of railway tariffs placed their reports before the association and they were adopted.

The committee on railway statistics said that replies to inquiries as to the desirability of changing the fiscal year from June 30 to December 31 did not indicate any strong desire, either on the part of railway commissioners or of the carriers interested, in favor of a change of the date for closing the fiscal year. In view of such a situation they decided it would be unwise to recommend making the change.

Other reports submitted to the association for action during the present session are the following: On shippers' claims; on common carriers; on rates and rate making; on railway taxes and plans for ascertaining the fair value of railway property; and on powers, duties and work of state railway commissioners.

The new railway built by the French in Africa runs straight from the seacoast to the Niger, and thus eliminates the changes from rail to water and vice versa at St. Louis and Kayes on the Senegal route. Kurussu, the point where it reaches the Niger, is about 300 miles above Kulikoro, where the Niger becomes navigable for larger river steamers. An extension of the line from Kurussu to Kulikoro will therefore be necessary before the new route can compete with the older for passenger and mail service. For freight and supplies that can be shipped in barges, the new route will doubtless at once replace the older.

General News Section.

The Philadelphia & Reading has made an increase of 5 per cent. in the wages of certain station agents, telegraphers and men in interlocking signal cabins.

The Long Island Railroad has just distributed \$450 in premiums for excellence in track work. The first premium for the best supervisor's division went to Frank Turner, and the second to C. King.

Freight brakemen of the Pennsylvania Railroad who have been in the service of the company five years are to be given season passes, and those who have been in the service ten years will have such passes for themselves and wives.

The New York State Health Commissioner has ordered the New York, New Haven & Hartford and the New York Central to close the washrooms on all trains passing through the limits of the Croton watershed, where the water supply of the city of New York might be polluted.

The voters of South Dakota, who at the election last week voted on a proposition to compel the use of electric headlights on locomotives, rejected it by a considerable majority. Final returns have not yet been received, but it appears that the majority against the proposed law will be at least 15,000.

The National Civic Federation is to hold its eleventh annual meeting in New York City January 12, 13 and 14. The federation discusses the regulation of corporations and of railways and municipal utilities; compensation for industrial accidents and arbitration. The state councils, organized by the federation, will meet to discuss the unification of the laws of different states.

The Chicago Great Western announces that the offices of the president, vice-president, general manager, general freight agent, general purchasing agent and purchasing agent are now in the eleventh story of the People's Gas building, Adams street and Michigan avenue, Chicago. The offices of the accounting engineering, and treasury departments will remain in the Grand Central station, Fifth avenue and Harrison street.

Purdue University, Lafayette, Ind., has just opened new buildings for instruction in mechanical drawing, descriptive geometry and shop work, and dedicatory exercises were held November 12, with addresses by President Stone, Dean Benjamin and Hon. M. W. Mix. The main building is three stories high and contains 25,000 sq. ft. of floor space; and the shops cover 43,000 sq. ft. of ground. The new accommodations are sufficient for 750 students, half in the shops and half in the other departments; and the lecture room has seats for 300.

The New Jersey State Board of Assessors has completed the assessment of railway property for 1910. The figures show an increase of nearly \$18,000,000 in assessed valuation, and on account of this increase and an increase in the average tax rates the railways this year will pay in taxes practically half a million dollars more than last year. The total assessed valuation of railway property for this year is \$296,921,520, as against \$279,059,611 last year. On this year's assessment the roads will pay in taxes \$5,542,611, of which \$4,103,630 goes to the state and \$1,438,980 goes to the various localities as tax on second-class property.

The Board of Estimate of New York City is considering the proposal, which has been laid before it by the State Public Service Commission, for the operation by the city of the "Steinway" tunnel, from Forty-second street, Manhattan, to Brooklyn; but, according to a statement given out, the board is delayed because the Public Service Commission did not present a complete plan. The commission seems to have given the plan informal approval, but to carry it out the city must act in accordance with the offer of the Interborough Rapid Transit Company, which proposes to convey the tunnel to the city for nothing; but one of the conditions of the offer is that the Interborough shall have the privilege of building additional main tracks throughout the length of its Third avenue and Second avenue elevated lines.

The strike of express wagon drivers and helpers in New York City was terminated by the return of the men to work on Monday last. It is agreed that differences concerning hours, wages, etc., shall be at once taken up, and that any changes

fixed upon shall go into effect December 1. The companies agree to take back the strikers without prejudice, except in the cases of individuals who have been guilty of unlawful acts, and to make no discrimination against any applicant because of his membership in a labor union. On Tuesday thirty of the strikers complained to the mayor of New York that they had been refused reinstatement, and the mayor undertook to investigate their cases. It appeared that these thirty had been leaders of the strikers, but they say that they have not been guilty of any overt acts.

The annual statement of the Pullman company shows that for the fiscal year ended July 31, 1910, earnings from cars amounted to \$35,365,321, and earnings from manufacturing, rentals, interest, etc., amounted to \$3,515,484. This gave the company \$38,880,805 revenue in 1910; this compares with total revenue in 1909 of \$33,801,156. Earnings from cars in 1909 totaled \$31,686,999, and from manufacturing, etc., \$2,114,156. Operating expenses in 1910 totaled \$20,839,570. This is greater by approximately \$2,300,000 than the expenses in 1909. After the payment of depreciation, interest paid to other companies in sleeping car associations, and after the payment of \$8,798,996 dividends, the company had a surplus in 1910 of \$5,134,502. In 1909 \$3,999,070 dividends were paid, and the surplus was \$2,949,131. The company had cash on hand of \$13,752,450 in 1910 and of \$11,618,522 in 1909. Accounts receivable last year totaled \$9,637,776, and in 1909 \$3,871,706. Accounts payable amounted to \$5,383,741 in 1910, and to \$3,860,706 in 1909.

The Upper Berth.

The announcement that the Pullman company has decided to abide by the order of the Interstate Commerce Commission and charge a smaller price for upper than for lower berths will generally be hailed with satisfaction. Should the company in its generosity go so far as to fix the charge for the upper berth at three-fourths that of the lower there would be still further reason for gratification.

To charge the same for the second-story shelf, with which those who came late were obliged to content themselves as for a first floor reservation has always been unreasonable. The new arrangement will afford more economical accommodation to those compelled to consider the question of expense, and will likewise give larger opportunity to those whose architecture is such that without a derrick the upper berth closely approaches the unattainable.

There is a possibility, of course, that those who are compelled to take an upper berth, either for economic reasons or because they are too late to secure a lower, will be compelled to submit to a larger measure of contemptuous scorn from the colored divinities who preside over the affairs of travelers by night; but even that may be, in a measure at least, averted by continuous and loudly uttered protestations at the cruelty of the fate which condemns one to travel up aloft.

For those whose accommodations are circumscribed by lack of opportunity rather than by lack of funds, the saving in actual financial outlay which will result from occupancy of the upper berth will at least permit of the purchase of one small measure of liquid consolation at the prevailing prices on Pullman buffet cars, so that considered from every point of view it seems a safe prediction that the traveling public will be happier because the Pullman company has kindly consented to heed the peremptory order of the Interstate Commerce Commission.—*New York Tribune*.

That "Awful Arbitrary" at St. Louis.

Shrieks to high heaven about the Terminal's so-called "arbitrary" on St. Louis commerce are veritably "great noise and little wool" when you know the facts. I have noted that some shoe manufacturers of this city have been leading the outcry against the Terminal. I have thought that maybe the arbitrary was a great burden upon our great shoe business. So I made inquiry, and here you are:

There were manufactured in St. Louis last year 24,282,042 pairs of shoes of a value of \$43,300,824.

The total shoe trade of St. Louis is \$57,310,306; indicating a sale of 32,136,624 pairs of shoes, in 2,678,052 cases.

Of this business there were shipped east to points within the one hundred mile territory—there is no arbitrary on westbound shipments or on shipments beyond one hundred miles to the east:

1,800,000 pounds } of shoes.
30,000 cases }
360,000 pairs }

The so-called arbitrary on these shipments was 3 cents on each 100 lbs., 1.8 cents per case, and 0.15 cents per pair of shoes.

A total of \$540 per year arbitrary on a business of \$57,000,000. And that \$540 was divided among about 20 shoe manufacturers and jobbers.

Isn't it awful?—William Marion Reedy in the *St. Louis Mirror*.

Railway Business Association.

The annual business meeting of the Railway Business Association will be held at the Waldorf Astoria Hotel, New York City, at 11 A. M., November 22. A number of important matters are expected to come up for decision, and as large an audience as possible is desired.

The annual dinner of the association, which will be held at the Waldorf Astoria on the evening of November 22, has been subscribed to the limit of the main dining room, and applicants for places have been informed that they could only be seated in an adjoining room. The acceptances include an even larger number of men outside the railway and railway equipment interest than at the dinner last year. In addition to the addresses already announced to be delivered by Chairman Martin A. Knapp of the Interstate Commerce Commission, President Daniel Willard of the Baltimore & Ohio, John Claflin, president of the H. B. Claflin Company, and the presiding officer, George A. Post, there will be some original poems and humorous remarks by Tom Daly, the Philadelphia newspaper writer.

New York Railroad Club.

At the annual meeting held Friday, November 18, J. N. Redfern, superintendent of the relief department of the Chicago, Burlington & Quincy, presented a paper on "Employers' Liability and Railway Relief Departments."

International Congress of Refrigerating Industries.

At the second International Congress of the Refrigerating Industries, which has just closed a successful meeting at Vienna, Austria, it was decided to hold the third International Congress in the United States, in 1913.

Central Railway Club.

At the meeting in Buffalo, N. Y., November 11, the following officers were elected: E. M. Tewkesbury (South Buffalo Railway), president; Millard Kells (Lehigh Valley), first vice-president; W. T. Jones (New York Central), second vice-president. G. W. Smith, past president of the club and traffic representative of the Lackawanna Steel Company, and G. A. Bowman, of the B. R. & P., were elected members of the executive committee.

American Society of Civil Engineers.

At the meeting held in New York, November 16, a paper was presented by H. H. Wadsworth on "The Failure of the Yuba River Debris Barrier, and the Efforts Made for Its Maintenance." This paper was printed in the September number of "Proceedings."

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.
AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomson, Scranton, Pa.; next meeting, June 22, 1911; Niagara Falls, N. Y.
AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—C. M. Burt, Boston, Mass.; next meeting, St. Paul, Minn.
AMERICAN ASSOCIATION OF LOCAL FREIGHT AGENTS' ASSOCIATION.—G. W. Dennison, Pennsylvania Co., Toledo, Ohio.
AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—O. G. Fetter, Carew building, Cincinnati, Ohio.
AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 24 Park Place, New York.
AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago; Sept. 17-19, 1911; St. Louis, Mo.

AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION.—E. H. Fritch, Monadnock building, Chicago; March 21-23, 1911, Chicago.
AMERICAN RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L. S. W. Ry., St. Louis, Mo.; May 6, 1911; Detroit, Mich.
AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago.
AMERICAN TOOL FOREMEN'S ASSOCIATION.—O. T. Harroun, Bloomington, Ill.
AMERICAN ROADBUILDERS' ASSOCIATION.—Dec. 6-9; Indianapolis, Ind.
AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Phila.
AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wednesdays, except July and August; annual, Jan. 18-19, New York.
AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—D. J. Haner, 13 Park Row, New York.
AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 29th St., New York; annual, Dec. 6-9; New York.
AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Doncker, 29 W. 39th St., New York.
ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago; April 26, 1911; New Orleans, La.
ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago; May, 1911; Montreal, Can.
ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—G. B. Colegrove, I. C. R.R., Chicago.
ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 135 Adams St., Chicago; June 19, 1911; Boston, Mass.
ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 24 Park Place, New York; Dec. 13-14, Chicago; June 20-21, 1911; Cape May City, N. J.
CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tuesday in month, except June, July and Aug.; Montreal.
CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays; Montreal, annual, last week January.
CAR FOREMAN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.
CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo.
CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—D. F. Jurgensen, 116 Winter St., St. Paul; 2d Monday, except June, July and Aug.; St. Paul.
ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.
ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton building, Pittsburgh; 1st and 3d Tuesday; annual, Jan. 17, 1911; Pittsburgh.
FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Rich. & Pot R.R., Richmond, Va.; 20th annual, June 21, 1911; St. Paul, Minn.
GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—H. D. Judson, 209 Adams St., Chicago; Wednesday preceding 3d Thursday; Chicago.
INDIANAPOLIS RAILWAY AND MECHANICAL CLUB.—B. S. Downey, C. & H. & D., Indianapolis, Ind.
INTERNATIONAL MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York; next convention, Omaha, Neb.
INTERNATIONAL RAILWAY FUEL ASSOCIATION.—D. P. Sebastian, La Salle St. Station, Chicago; May 15-18; Chattanooga, Tenn.
INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.
INTERNATIONAL RAILWAY MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio.
INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, rue de Louvain, 11 Brussels; 1915, Berlin.
IOWA RAILWAY CLUB.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August; Des Moines.
MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony, bldg., Chicago.
MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass.
NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept.; Boston.
NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August; New York.
NORTH-WEST RAILWAY CLUB.—T. W. Flanagan, Soo Line, Minn. 1st Tues. after 2d Mon., except June, July, August; St. Paul and Minneapolis, Minn.
NORTHERN RAILWAY CLUB.—C. L. Kennedy, C. & M. & St. P.; 4th Saturday; Duluth.
OMAHA RAILWAY CLUB.—A. H. Christiansen, Barker Bldg.; second Wed. Railway Club of Kansas City.—C. Manlove, 1008 Walnut St., Kansas City; 3d Friday in month; Kansas City.
RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, Pittsburgh, Pa.; 4th Friday in month, except June, July and August; Pittsburgh.
RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, 12 North Linden St., Bethlehem, Pa.
RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio; annual, May, 1911.
RICHMOND RAILROAD CLUB.—F. O. Robinson; 2d Monday; Richmond.
ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.; Oct., 1911; St. Louis.
ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug.; St. Louis.
SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago.
SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. R. Ry., Montgomery, Ala.
SOUTHERN & SOUTHWESTERN RAILROAD CLUB.—A. J. Merrill, Prudential bldg., Atlanta; 3d Thurs.; Jan., Mar., July, Sept. and Nov.; Atlanta.
TOLEDO TRANSPORTATION CLUB.—L. G. Macomber, Woolson Spice Co., Toledo; 1st Sat.; annual, May 6, 1911; Toledo.
TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; 1st Sat. after 1st Wed.; annual, Dec. 13; Buffalo.
TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August; New York.
TRAFFIC CLUB OF PITTSBURGH.—T. J. Walters, Oliver Building, Pittsburgh; meetings monthly; Pittsburgh.
TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago; annual, June 20, 1911; Baltimore.
TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., E. Buffalo.
WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg; 2d Monday, except June, July and August; Winnipeg.
WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, First National Bank bldg., Chicago; annual, Jan. 17-19; Chicago.

Traffic News.

The Duluth, Missabe & Northern and the Canadian Northern now run sleeping cars through regularly between Duluth and Port Arthur via Fort Frances.

Bulletin No. 81, which has been issued by the Bureau of Statistics of the Department of Agriculture, contains a forty-year review of freight transportation on the Great Lakes.

The Interstate Commerce Commission has received from Detroit a complaint against the Pere Marquette and other railways in Michigan, charging that the enforcement of the Michigan demurrage rules on interstate traffic is unjust.

The Chicago, Milwaukee & St. Paul, which owns and operates the sleeping cars used on its lines, announces that on the lines from Chicago to Minneapolis, Chicago to Kansas City and Chicago to Houghton, Mich., steel sleeping cars are now in use.

The announcements by the Pennsylvania Railroad that its ferry from Jersey City to Brooklyn, around the southern end of Manhattan, will be discontinued November 27, brings out the fact that this ferry is made use of by many truck wagons of large warehouses in Brooklyn. With no direct ferry these wagons will have to go through Manhattan, and make two ferry voyages.

The Department of Agriculture has issued two bulletins giving information about dry farming. A statement issued by the department says that the data collected on this subject is not yet complete, but in view of the urgent demand of settlers and of the need of more accurate information about climate and rainfall, these bulletins have been issued to meet as well as possible the present wants.

The New York Central has modified its rules for storage charges on baggage remaining at stations over twenty-four hours by the addition of a clause providing for the waiving of charges when, by reason of strikes or riots [such as have occurred in New York City during the past two weeks], the removal of baggage is rendered impossible. The rules now provide that all baggage thus stored is at the owner's risk.

Lumber merchants in San Francisco have brought suit in the United States Circuit Court against the Southern Pacific and other roads, alleging disobedience of the order issued by the Interstate Commerce Commission in November, 1906, ordering reductions in the rates on lumber from Portland, Ore., to San Francisco. The order of the commission specified 75 cents, but the complaint says that the roads are charging 85 cents.

The Boston & Albany announces that new cars are to be provided for the B. & A. section of the 20th Century Limited trains, and that these trains will have a stenographer, a barber and a lady's maid. In connection with the publication of this announcement in the Massachusetts papers it is said that the average number of passengers on the 20th Century train from Boston to Albany is 14, and from Albany to Boston 19. These trains have been running since August 15, 1909.

According to a consular report, a line of steamships is to be established between Sydney, New South Wales, and Valparaiso, Chili, to connect there with the railway across the Andes, under arrangements by which passengers and mail will be carried from Australia to England in 27 days. The Atlantic voyage will be made by the Royal Mail Steamship Line sailing from Buenos Ayres and Montevideo. The time between Australia and England by way of the Indian ocean is usually 31 days.

The National Industrial Traffic League has adopted resolutions holding that the "administration of the act to regulate commerce requires a certain knowledge that can be had only by persons who have had a wide experience in traffic matters, and that, therefore, the Commission should have at least two members possessing the experience and traffic knowledge mentioned." And the League petitions President Taft to appoint at least two traffic men when pending changes in the personnel of the Interstate Commerce Commission are made.

The center of corn production in the United States for several years past, if we remember correctly, has been Omaha—at least Omaha has had the most noisy Corn Exposition. Now,

however, the Western metropolis will have to look out for its laurels. It has a rival in rock-ribbed New England. At the New England corn exposition, held at Worcester last week, a prize of \$500 went to P. C. Davis of Granby, Mass., for having raised 103¼ bushels of corn on a single acre. This was the final measurement of dry, yellow, flint corn. The corn at the time of harvest measured 127 bushels, shelled.

The New York, New Haven & Hartford announces that its midnight express trains between New York and Boston will hereafter be divided into two sections each way, the second section leaving at one o'clock, and arriving at destination at seven o'clock; thus running through six hours and arriving at about the same time as the first section, which starts at twelve o'clock. The second section will have no cars but sleeping cars, and one of these will be "de luxe"; that is to say, the sleeping rooms will have brass bedsteads, and the fare for such a room will be \$12 for one passenger, or \$16.75 for two passengers. The transportation fare is \$4.75 for each passenger, from which it appears that the cost of the room is \$7.25.

The Lehigh Valley, announcing the opening of the Hudson & Manhattan underground railway to Thirty-third street, New York city, and the discontinuance after November 27 of the ferry connections from Lehigh Valley trains in Jersey City (Pennsylvania station) to Twenty-third street, New York, and to Fulton street, Brooklyn, gives notice that baggage from stations on its line checked to New York will be delivered at Desbrosses street station. The ferry connections will be to Desbrosses street and Cortlandt street, and baggage for Cortlandt street must be so designated. Passengers reaching New York by Lehigh Valley trains and destined for Brooklyn are advised to take the Hudson tube to the Hudson Terminal in Manhattan and thence to go by the Interborough subway to Borough Hall, or by surface street cars over the Brooklyn Bridge.

The St. Louis & San Francisco has completed arrangements for interchange of traffic with the National Railways of Mexico over the recently completed international bridge connecting Brownsville Tex., and Matamoros, Mex. By the traffic agreement entered into several months ago between the Frisco and the Houston & Texas Central and other Southern Pacific lines in Texas, the use of the Southern Pacific tracks provides the absent link in the Frisco system between the main line and the St. Louis, Brownsville & Mexico. The National of Mexico has extended one of its branches into Matamoros, and this will be the main line for the through traffic between the two countries. Through passenger trains from New Orleans to the City of Mexico will soon be put on, and through cars will probably be run from Chicago, St. Louis and Kansas City to the Mexican capital. Freight trains are already running.

John S. Runnells, vice-president and general counsel of the Pullman company, in an interview at Chicago November 10 said that if the Interstate Commerce Commission, on rehearing the testimony in the cases involving the reasonableness of the Pullman company's rates, shall reaffirm its holding that there should be a difference between the rates for upper and lower berths, it is probable that the Pullman company will establish the desired differential. He said that some of the reductions ordered by the Commission, particularly in the rates for lower berths, are felt by the company to be too great, and that additional evidence will be presented to the Commission to show that this is true. Complaints regarding the reasonableness of the rates and the profits of the Pullman company have been filed with the Interstate Commission by the state railway commissions of Indiana, Arkansas and Oklahoma, and a hearing will be held in Chicago, November 30.

With its new time-table to go into effect November 27, when through trains will run to and from Seventh avenue, New York City, the Pennsylvania Railroad will shorten slightly the times of many of the trains. The eighteen-hour train to Chicago, which now leaves Jersey City at 4:14, will leave New York at 4:00. Under the present time-table passengers for this train leave New York by the Twenty-third street ferry at 3:55; by the Cortlandt street ferry at 4:00, and from Church street, by the trains of the Hudson tubes, at 4:05. Other trains are changed in a similar way. There is a new train to Chicago at 8:34 p. m., running through in 25 hours, and the Chicago Limited (5 p. m.) is to run through in 22 hours, or two hours less than now.

On the same date the 20th Century Limited of the New York Central, which is now an all-steel train, will be changed so as to leave New York at four o'clock, the same as the Pennsylvania's train, and it will arrive in Chicago at 8:55, the same time with the Pennsylvania. The New York Central will also put on a twenty-two hour train, leaving New York at five o'clock.

Switching Rate Agreement at Chicago.

The following is the text of the agreement regarding switching rates at Chicago, which has been reached by representatives of the railways and the Chicago Association of Commerce, the Chicago Board of Trade and the Illinois Manufacturers' Association:

APPLICATION OF CHICAGO RATES.

- A—Chicago rates to apply on all carload traffic to and from all industries, warehouses and elevators provided with private sidings and located within the Chicago territory, as defined below in section B, the line bringing the traffic into or taking the traffic out of said district to absorb such connecting line switching charges as may be necessary to make delivery to or receive from such industries, warehouses and elevators, when freight charges are \$15 per car, or more, and where freight charges are less than \$15 per car the rates will include such portion of connecting lines' switching charges as will leave the revenue of the carrier the same net revenue as would accrue after absorption of switching charges above authorized out of a charge of \$15 per car.
- B—Definition of Chicago Territory.—On and within the following described boundary: Commencing at Lake Michigan at a point directly east of Clarke Junction, Ind., thence from Clarke Junction southwardly through Calumet to Grasselli, Ind., inclusive; then via the Indiana Harbor Belt and C. I. & S. to and including Osborn, Ind.; thence via the N. Y. C. & St. L. to Hammond, Ind., inclusive; thence westwardly to Liberty, Ill., inclusive; thence northwest to Dalton, Ill.; thence southwest to and including Harvey; thence northwest through Blue Island, Ill., inclusive; thence northwardly on and via the Indiana Harbor Belt through Chicago Ridge, Argo and McCook to LaGrange, Ill., inclusive; thence north through Broadview, Bellwood and Proviso to Franklin Park, Ill., inclusive; thence on and via the Wisconsin Central to Des Plaines, Ill., inclusive; thence southeast on and via the C. & N. W. to Chicago city limits; thence east along the Chicago city limits to Lake Michigan, also including Weber and Greenwood Avenue stations on the Mayfair cut-off of the C. & N. W.
- C—Connecting Lines' Switching.—On traffic other than grain, coal and coke, the connecting lines' switching charge of the delivering or initial road to be not greater than 1 cent per 100 lbs., minimum weight 60,000 lbs.
- D—Connecting line switching is hereby defined to be:
- (1) The movement of a loaded car from an elevator, warehouse, industry or place of business located upon any private siding to any connecting road at a junction point, or
 - (2) The movement of a loaded car from any connecting railway at a junction point to any elevator, warehouse, industry or place of business located upon any private siding:
- Provided, the point from and the point to which the car is switched are both within the limits of the Chicago territory as defined above, and the point at which the traffic originates or to which the traffic is destined is without Chicago territory.*

INDUSTRIAL SWITCHING.

- A—Industrial switching is hereby defined to be the movement of a loaded car from an elevator, warehouse, industry or place of business located upon any private siding to another elevator, warehouse, industry or place of business located upon any private siding, when point of origin and destination are both within the Chicago switching limits as defined in paragraph B, below:
- B—Chicago switching limits to be as follows:
- Penna. Co.—
Indiana Harbor, Ind.
Clarke Junction, Ind.
Hammond, Ind.
Liberty, Ill., and north and west of these points.
- P. C. C. & St. L.—
Dalton, Ill., and north thereof.
- L. S. & M. S.—
Indiana Harbor, Ind., and north and west thereof.
- M. C.—
Gibson, Ind., and west and north thereof.
- C. I. & S.—
Osborn, Ind., and north thereof.
- N. Y. C. & St. L.—
Osborn, Ind., and west and north thereof.
- I. H. Belt—
Commencing at and including Indiana Harbor, Ind., then south through Calumet, Grasselli and Gibson, Ind., to Osborn, Ind., inclusive; west of Gibson, through Hammond, Ind., Calumet Park and Dalton, Ill., to Blue Island, Ill., inclusive; thence northwardly through Chicago Ridge, Argo, McCook, LaGrange, Broadview, Bellwood and Proviso, Ill., to Frank Park, Ill., inclusive, including its branches within these boundaries.
- C. B. & Q.—
Clyde, Ill., and east thereof.
- C. & N. W.—
Fortieth avenue, Chicago, shops and east and south thereof, including its Wood street, Sixteenth street and Stock Yards lines; north of Chicago shops through and including Cragin to Mayfair, thence southeast to and including Deering.
- C. M. & St. P.—Galewood and east and south thereof; Mayfair and east and south thereof; south of Wilson avenue.
- C—Industrial Switching Charge:
(1) Maximum industrial switching charge between two industries located on the same road, 1½ cents per 100 lbs., minimum weight 60,000 lbs.

(2) Between an industry on one railroad and an industry on another railroad, the entire charge not to exceed 1½ cents per 100 lbs., minimum weight 60,000 lbs.

(3) Where three or more roads are required, the intermediate line or lines' charge not to exceed 1½ cents per 100 lbs., minimum weight 60,000 lbs. for each intermediate line.

Note.—The foregoing industrial switching charges do not apply to grain, coal or coke. There is to be no change in the rates for switching on grain.

D—No charge is to be made against any consignee or consignor for use of cars, per diem, or otherwise, than as shown above for the switching movement of any loaded car or cars, except demurrage charge assessed in accordance with rules of the Chicago Demurrage Bureau. No charge shall be made for the movement of any empty car preceding or succeeding a loaded car switching movement.

The adoption of the foregoing code of rules is being opposed by a small minority of shippers, but it is believed that as it has the backing of all the large railway and shipping interests it will finally prevail.

Crop Conditions.

The United States Department of Agriculture has made the following general review of crop conditions:

The harvests of 1910 have been nearly completed, with results exceeding the expectations during the growing period. Preliminary estimates have been made of the production of most of the important crops, from which it appears that the aggregate production of crops in 1910 are approximately 7.6 per cent. greater than the crops of 1909—and about 9.1 per cent. greater than the average annual production of the preceding five years.

The aggregate of this year's crop production in each state, based on preliminary estimates, is given below; the first figure after each state indicates the total crop production in 1910, as compared with total production in 1909; the second figure indicates production in 1910, compared with the average production in the preceding five years; 100 representing last year's production in the first case, 100 representing the average annual production of the preceding five years in the second:

Maine 120, 114; New Hampshire 128, 115; Vermont 118, 117; Massachusetts 113, 110; Rhode Island 113, 107; Connecticut 118, 118; New York 114, 109; New Jersey 119, 113; Pennsylvania 119, 109.

Delaware 147, 134; Maryland 122, 110; Virginia 118, 121; West Virginia 99, 112; North Carolina 116, 123; South Carolina 115, 133; Georgia 104, 111; Florida 106, 116.

Ohio 104, 110; Indiana 107, 115; Illinois 104, 115; Michigan 98, 108; Wisconsin 82, 85; Minnesota 90, 111; Iowa 107, 105; Missouri 111, 113; North Dakota 40, 47; South Dakota 84, 98; Nebraska 99, 96; Kansas 95, 95.

Kentucky 101, 113; Tennessee 118, 117; Alabama 130, 120; Mississippi 134, 120; Louisiana 116, 116; Texas 143, 143; Oklahoma 115, 101; Arkansas 131, 125.

Montana 89, 160; Wyoming 102, 149; Colorado 79, 93; New Mexico 83, 119; Arizona 76, 98; Utah 98, 106; Nevada 149, 183; Idaho 95, 120; Washington 82, 93; Oregon 102, 111; California, 122, 116.

The preliminary estimates of production in 1910, with comparisons, of such crops as have been estimated quantitatively by the bureau of statistics, with their average farm prices on November 1, 1910, and November 1, 1909, are as follows:

CROPS.	PRODUCTION ('000 omitted).			PRICE (a).	
	1910	1909.	Av. 5 Yrs.	Nov. 1,	Nov. 1,
	Preliminary.		1904-1908.	1910.	1909.
Corn	bu. 3,121,381	2,772,376	2,695,517	52.6	62.2
Wheat	" 691,769	737,189	655,866	90.5	99.9
Oats	" 1,096,396	1,007,353	874,863	34.9	41.0
Barley	" 158,138	170,284	155,134	61.5	53.3
Rye	" 32,088	32,239	30,504	71.6	73.6
Buckwheat ...	" 17,084	17,438	14,880	65.9	71.6
Flaxseed	" 15,050	25,856	25,822	229.4	139.8
Potatoes	" 328,787	376,537	295,707	55.7	57.8
Hay	tons 60,116	64,938	62,570	\$11.96	\$10.35
Tobacco	lbs. 967,150	949,357	678,422	.....	.....

(a). Cents per bushel except hay.

Prices for important crops averaged, on November 1, about 5.4 per cent. lower than a year ago.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF SEPTEMBER, 1910. (SEE ALSO ISSUE NOVEMBER 11.)

MONTH OF SEPTEMBER, 1910 (SEE ALSO ISSUE EXPENSES—11.)																		
Name of road.	Mileage operated at end of period.	Operating revenues				Maintenance of way and structures				Trans- portation.	General.	Total.	Net operating revenues (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or dec.) last year.	
		Freight.	Passenger.	Inc. misc.	Total.	Way and structures.	Equipment.	Traffic.										
Atlanta, Birmingham & Atlantic.....	662*	\$157,585	\$48,854	\$221,684	\$157,585	\$27,678	\$38,085	\$14,352	\$82,764	\$8,364	\$171,243	\$157,585	.....	\$80,441	.....	\$26,044	\$10,000	.....
Baltimore & Ohio-System.....	4,434	6,380,982	1,571,834	8,417,834	6,380,982	1,032,634	1,433,746	1,600,897	2,830,888	151,749	5,610,644	6,380,982	.....	2,807,190	.....	2,604,116	218,054	.....
Bangor & Aroostook.....	599†	198,244	72,226	283,016	198,244	37,315	33,036	3,481	77,326	11,035	165,827	198,244	.....	120,823	.....	118,289	2,525	.....
Buffalo, Rochester & Pittsburgh.....	567	693,391	105,500	832,576	693,391	81,775	124,328	11,235	244,792	13,087	475,117	693,391	.....	357,157	.....	341,501	16,000	.....
Central of Georgia.....	1,915	689,264	279,928	1,059,807	689,264	151,456	179,530	34,466	325,345	41,420	732,217	689,264	.....	372,590	.....	289,244	45,000	.....
Chesapeake & Ohio.....	1,940	2,187,519	525,625	2,818,250	2,187,519	371,292	501,265	44,504	724,306	61,625	1,751,992	2,187,519	.....	1,066,258	.....	990,526	76,750	.....
Chicago & Eastern Illinois.....	965	814,075	200,405	1,072,884	814,075	107,146	190,767	24,236	371,414	30,326	723,889	814,075	.....	348,995	.....	315,152	32,000	.....
Chicago Great Western.....	1,489	763,373	298,598	1,146,193	763,373	153,505	171,051	49,208	403,667	81,238	1,238,899	763,373	.....	333,811	.....	303,182	32,823	.....
Chicago, Indianapolis & Louisville.....	616	383,330	152,161	576,802	383,330	72,530	70,438	17,917	180,031	21,443	355,359	383,330	.....	221,443	.....	198,943	22,500	.....
Cincinnati, Hamilton & Dayton.....	1,031	597,103	184,609	882,991	597,103	105,223	142,719	23,463	368,347	21,241	609,163	597,103	.....	263,093	.....	236,203	26,900	.....
Colorado & Southern.....	901†	473,488	179,745	726,194	473,488	71,974	78,624	10,499	159,073	13,117	331,847	473,488	.....	239,373	.....	219,032	19,360	.....
El Paso & Southern.....	1,248	665,182	179,745	882,991	665,182	105,223	142,719	23,463	368,347	21,241	609,163	665,182	.....	236,269	.....	220,869	15,400	.....
Elgin, Joliet & Eastern.....	808†	685,982	144,111	1,003,574	685,982	111,001	143,777	22,307	327,136	26,749	635,429	685,982	.....	236,269	.....	220,869	15,400	.....
Galveston, Harrisburg & San Antonio.....	1,387	249,867	138,511	486,678	249,867	54,606	53,509	13,298	193,198	15,058	329,669	249,867	.....	143,016	.....	131,654	24,748	.....
Grand Rapids & Texas.....	587	445,987	138,511	1,003,574	445,987	111,001	143,777	22,307	327,136	26,749	635,429	445,987	.....	236,269	.....	220,869	15,400	.....
Houston & Texas.....	1,387	249,867	138,511	486,678	249,867	54,606	53,509	13,298	193,198	15,058	329,669	249,867	.....	143,016	.....	131,654	24,748	.....
Illinois Central.....	4,550	3,889,825	1,183,148	5,172,960	3,889,825	752,729	1,108,548	106,002	1,628,050	98,017	3,793,346	3,889,825	.....	1,479,614	.....	1,278,417	197,639	.....
International & Great Northern.....	1,159	709,340	190,986	1,129,586	709,340	112,958	112,958	19,547	307,014	21,841	579,028	709,340	.....	337,772	.....	352,593	23,000	.....
Kansas City Southern.....	827	643,481	137,039	865,745	643,481	91,118	109,920	26,034	275,229	21,672	337,772	643,481	.....	337,772	.....	308,295	29,477	.....
Lake Erie & Western.....	886	400,520	106,267	532,662	400,520	71,168	84,308	24,364	192,611	11,195	389,666	400,520	.....	275,462	.....	242,301	35,993	.....
Maine Central.....	932	457,404	352,351	860,258	457,404	171,268	154,393	36,580	286,843	31,327	584,796	457,404	.....	254,961	.....	227,301	25,460	.....
Mobile & Ohio.....	1,114	641,843	118,609	877,389	641,843	100,331	183,719	37,303	299,767	34,327	623,428	641,843	.....	306	.....	287,997	34,500	.....
Nashville, Chattanooga & St. Louis.....	1,230	644,641	163,230	970,874	644,641	149,338	153,117	48,790	357,791	1,091	668,976	644,641	.....	267,098	.....	231,840	34,500	.....
New York, Ontario & Western.....	560	622,578	173,488	826,343	622,578	88,670	128,673	12,277	293,043	1,825	540,488	622,578	.....	255,433	.....	265,599	17,500	.....
Oregon R. R. & Nav. Co.....	1,489	950,732	404,854	1,441,868	950,732	224,554	269,801	40,467	444,228	33,511	886,443	950,732	.....	55,433	.....	494,955	59,227	.....
Oregon Short Line.....	1,595†	1,375,734	481,398	1,965,372	1,375,734	269,801	178,239	30,467	444,228	42,630	962,402	1,375,734	.....	1,002,970	.....	942,150	61,917	.....
Philadelphia & Reading.....	1,022	2,892,984	654,307	3,795,891	2,892,984	378,999	684,192	41,467	1,104,534	74,504	2,331,512	2,892,984	.....	1,422,375	.....	1,355,994	135,994	.....
St. Louis & San Francisco.....	4,732	2,338,360	1,023,048	3,582,300	2,338,360	503,330	582,300	101,032	1,195,978	84,232	2,360,588	2,338,360	.....	1,231,612	.....	1,061,187	160,425	.....
St. Louis Southwestern.....	773	1,129,937	119,937	1,379,906	1,129,937	67,112	131,032	28,746	166,221	22,455	383,560	1,129,937	.....	72,345	.....	253,719	35,943	.....
St. Louis & Western.....	703	262,455	92,360	354,815	262,455	60,598	69,667	11,177	146,564	15,435	303,291	262,455	.....	72,283	.....	63,646	17,060	.....
St. Pedro, Los Angeles & Salt Lake.....	1,105	381,040	215,321	634,845	381,040	128,060	98,487	31,432	239,995	15,435	506,507	381,040	.....	128,336	.....	97,435	56,222	.....
Seaboard Air Line.....	3,028†	1,885,492	358,528	2,511,728	1,885,492	246,387	209,930	54,980	537,853	52,148	1,110,207	1,885,492	.....	510,521	.....	443,619	32,374	.....
Southern Pacific Co.....	6,474†	4,890,691	2,807,098	8,697,732	4,890,691	985,036	993,502	174,323	2,078,038	231,310	4,762,222	4,890,691	.....	3,782,066	.....	3,567,037	275,054	.....
Wabash.....	2,515	1,791,375	757,669	2,798,835	1,791,375	273,336	392,904	70,008	613,998	61,833	1,776,629	1,791,375	.....	968,206	.....	892,057	76,676	.....
Yazoo & Mississippi Valley.....	1,372	330,105	209,351	790,670	330,105	228,347	142,619	16,279	270,021	21,416	678,682	330,105	.....	111,988	.....	78,786	33,000	.....

THREE MONTHS OF FISCAL YEAR, 1911.																		
Name of road.	Mileage operated at end of period.	Operating revenues				Maintenance of way and structures				Trans- portation.	General.	Total.	Net operating revenues (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or dec.) last year.	
		Freight.	Passenger.	Inc. misc.	Total.	Way and structures.	Equipment.	Traffic.										
Atlanta, Birmingham & Atlantic.....	662*	\$459,134	\$164,500	\$664,674	\$459,134	\$77,975	\$115,390	\$42,069	\$248,200	\$25,604	\$509,239	\$459,134	.....	\$155,435	.....	\$30,000	\$35,633	.....
Baltimore & Ohio-System.....	4,934	18,530,255	4,641,067	24,515,627	18,530,255	3,137,137	4,210,086	562,257	8,207,081	462,563	16,768,546	18,530,255	.....	7,747,081	.....	7,123,130	171,039	.....
Bangor & Aroostook.....	599†	479,289	200,000	726,400	479,289	133,260	98,058	10,635	241,953	31,953	167,816	479,289	.....	244,975	.....	239,450	5,525	.....
Buffalo, Rochester & Pittsburgh.....	567	2,026,478	327,099	2,480,354	2,026,478	297,660	339,549	38,333	676,542	73,933	1,498,411	2,026,478	.....	881,836	.....	934,131	22,563	.....
Central of Georgia.....	1,915	2,218,580	1,875,296	3,101,971	2,218,580	1,036,572	1,385,572	139,972	2,526,159	149,429	2,169,558	2,218,580	.....	882,093	.....	1,345,500	768,158	.....
Chesapeake & Ohio.....	1,940	6,235,835	1,575,920	8,176,371	6,235,835	817,327	1,036,572	139,972	2,526,159	149,429	2,169,558	6,235,835	.....	3,126,131	.....	5,302,629	283,256	.....
Chicago & Eastern Illinois.....	965	2,130,924	454,960	3,198,387	2,130,924	335,053	426,991	47,956	1,172,531	103,441	2,083,043	2,130,924	.....	1,023,585	.....	984,707	20,250	.....
Chicago Great Western.....	1,489	1,100,592	486,660	1,719,726	1,100,592	214,133	213,425	52,901	1,152,231	103,441	2,083,043	1,100,592	.....	647,093	.....	98,468	80,669	.....
Chicago, Indianapolis & Louisville.....	616	1,100,974	454,960	1,719,726	1,100,974	214,133	213,425	52,901	1,152,231	103,441	2,083,043	1,100,974	.....	647,093	.....	98,468	80,669	.....
Cincinnati, Hamilton & Dayton.....	1,031	1,723,962	532,909	2,572,002	1,723,962	323,023	448,982	73,921	1,152,231	103,441	2,083,043	1,723,962	.....	1,023,585	.....	984,707	20,250	.....
Colorado & Southern.....	901†	1,821,183	582,329	2,526,242	1,821,183	323,023	448,982	73,921	1,152,231	103,441	2,083,043	1,821,183	.....	1,023,585	.....	984,707	20,250	.....
El Paso & Southern.....	1,248	1,441,368	335,218	2,226,243	1,441,368	323,023	448,982	73,921	1,152,231	103,441	2,083,043	1,441,368	.....	1,023,585	.....	984,707	20,250	.....
Elgin, Joliet & Eastern.....	808†	2,079,669	671,833	2,926,243	2,079,669	323,023	448,982	73,921	1,152,231	103,441	2,083,043	2,079,669	.....	1,023,585	.....	984,707	20,250	.....
Galveston, Harrisburg & San Antonio.....	1,387	1,896,247	428,184	2,643,158	1,896,247	323,023	448,982	73,921	1,152,231	103,441	2,083,043	1,896,247	.....	1,023,585	.....	984,707	20,250	.....
Grand Rapids & Texas.....	587	719,460	200,000	949,460	719,460	323,023	448,982	73,921	1,152,231	103,441	2,083,043	719,460	.....	1,023,585	.....	984,707	20,250	.....
Houston & Texas.....	1,387	719,460	200,000	949,460	719,460	323,023	448,982	73,921	1,152,231	103,441	2,083,043	719,460	.....	1,023,585	.....	984,707	20,250	.....
Illinois Central.....	4,550	9,727,574	3,151,127	15,039,024	9,727,574	1,509,016	2,300,196	358,166	3,869,369	299,023	10,027,515	9,727,574	.....	4,003,509	.....	3,932,226	1,251,614	.....
International & Great Northern.....	1,159	1,655,578	339,660	2,327,424	1,655,578	278,001	328,000	35,300	862,071	94,381	1,954,806	1,655,578	.....	663,915	.....	601,183	288,740	.....
Kansas City Southern.....	827	1,968,820	306,108	2,367,474	1,968,820	278,001	328,000	35,300	862,071	94,381	1,954,806	1,968,820	.....	663,915	.....	601,183	288,740	.....
Lake Erie & Western.....	886	1,187,920	406,105	1,697,773	1,187,920	226,313	264,938	26,286	525,071	36,951	1,154,106	1,187,920	.....	748,456	.....	876,486	263,463	.....
Maine Central.....	932	1,257,953	306,605															

Mileage operated on September 30, 1909.—* 641 miles; † 515 miles; ‡ 867 miles; § 770 miles; || 1,327 miles; ¶ 1,509 miles; a 2,987 miles; b 3,362 miles; c 2,987 miles; d 3,362 miles; e 2,987 miles; f 3,362 miles; g 2,987 miles; h 3,362 miles; i 2,987 miles; j 3,362 miles; k 2,987 miles; l 3,362 miles; m 2,987 miles; n 3,362 miles; o 2,987 miles; p 3,362 miles; q 2,987 miles; r 3,362 miles; s 2,987 miles; t 3,362 miles; u 2,987 miles; v 3,362 miles; w 2,987 miles; x 3,362 miles; y 2,987 miles; z 3,362 miles; aa 2,987 miles; ab 3,362 miles; ac 2,987 miles; ad 3,362 miles; ae 2,987 miles; af 3,362 miles; ag 2,987 miles; ah 3,362 miles; ai 2,987 miles; aj 3,362 miles; ak 2,987 miles; al 3,362 miles; am 2,987 miles; an 3,362 miles; ao 2,987 miles; ap 3,362 miles; aq 2,987 miles; ar 3,362 miles; as 2,987 miles; at 3,362 miles; au 2,987 miles; av 3,362 miles; aw 2,987 miles; ax 3,362 miles; ay 2,987 miles; az 3,362 miles; ba 2,987 miles; bb 3,362 miles; bc 2,987 miles; bd 3,362 miles; be 2,987 miles; 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dq 2,987 miles; dr 3,362 miles; ds 2,987 miles; dt 3,362 miles; du 2,987 miles; dv 3,362 miles; dw 2,987 miles; dx 3,362 miles; dy 2,987 miles; dz 3,362 miles; ea 2,987 miles; eb 3,362 miles; ec 2,987 miles; ed 3,362 miles; ee 2,987 miles; ef 3,362 miles; eg 2,987 miles; eh 3,362 miles; ei 2,987 miles; ej 3,362 miles; ek 2,987 miles; el 3,362 miles; em 2,987 miles; en 3,362 miles; eo 2,987 miles; ep 3,362 miles; eq 2,987 miles; er 3,362 miles; es 2,987 miles; et 3,362 miles; eu 2,987 miles; ev 3,362 miles; ew 2,987 miles; ex 3,362 miles; ey 2,987 miles; ez 3,362 miles; fa 2,987 miles; fb 3,362 miles; fc 2,987 miles; fd 3,362 miles; fe 2,987 miles; ff 3,362 miles; fg 2,987 miles; fh 3,362 miles; fi 2,987 miles; fj 3,362 miles; fk 2,987 miles; fl 3,362 miles; fm 2,987 miles; fn 3,362 miles; fo 2,987 miles; fp 3,362 miles; fq 2,987 miles; fr 3,362 miles; fs 2,987 miles; ft 3,362 miles; fu 2,987 miles; fv 3,362 miles; fw 2,987 miles; fx 3,362 miles; fy 2,987 miles; fz 3,362 miles; ga 2,987 miles; gb 3,362 miles; gc 2,987 miles; gd 3,362 miles; ge 2,987 miles; gf 3,362 miles; gg 2,987 miles; gh 3,362 miles; gi 2,987 miles; gj 3,362 miles; gk 2,987 miles; gl 3,362 miles; gm 2,987 miles; gn 3,362 miles; go 2,987 miles; gp 3,362 miles; gq 2,987 miles; gr 3,362 miles; gs 2,987 miles; gt 3,362 miles; gu 2,987 miles; gv 3,362 miles; gw 2,987 miles; gx 3,362 miles; gy 2,987 miles; gz 3,362 miles; ha 2,987 miles; hb 3,362 miles; hc 2,987 miles; hd 3,362 miles; he 2,987 miles; hf 3,362 miles; hg 2,987 miles; hh 3,362 miles; hi 2,987 miles; hj 3,362 miles; hk 2,987 miles; hl 3,362 miles; hm 2,987 miles; hn 3,362 miles; ho 2,987 miles; hp 3,362 miles; hq 2,987 miles; hr 3,362 miles; hs 2,987 miles; ht 3,362 miles; hu 2,987 miles; hv 3,362 miles; hw 2,987 miles; hx 3,362 miles; hy 2,987 miles; hz 3,362 miles; ia 2,987 miles; ib 3,362 miles; ic 2,987 miles; id 3,362 miles; ie 2,987 miles; if 3,362 miles; ig 2,987 miles; ih 3,362 miles; ii 2,987 miles; ij 3,362 miles; ik 2,987 miles; il 3,362 miles; 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pt 3,362 miles; pu 2,987 miles; pv 3,362 miles; pw 2,987 miles; px 3,362 miles; py 2,987 miles; pz 3,362 miles; qa 2,987 miles; qb 3,362 miles; qc 2,987 miles; qd 3,362 miles; qe 2,987 miles; qf 3,362 miles; qg 2,987 miles; qh 3,362 miles; qi 2,987 miles; qj 3,362 miles; qk 2,987 miles; ql 3,362 miles; qm 2,987

The Needs of Co-operation Between the Government and the Railways.

In discussing with a representative of *The Wall Street Journal* the cause and effect of the present difficulty American Railways are experiencing in selling securities on favorable terms, J. C. Stuart, vice-president and general manager of the Erie, said: "The time has come when a basis of co-operation such as has never existed must be established between the railways and the public.

"A complete understanding must be reached. Those who own the railways must recognize the temper of the present day public mind. Out of date tactics must be abolished. Buying railways indiscriminately regardless of public opposition must be done away with. The one man control idea is no longer tenable. What is needed is the proper co-operation of the owners and the managers of railways with the regulating bodies appointed by the people of this country, and if those who are in power in the railroads appreciated this and carefully entered into such co-operation I believe railway securities could be made as stable as any other investment in the country, or even more so.

"The same method should be adopted in this country that is in vogue abroad. Railway securities should be issued in small denominations and sold over the counter to the poor people and working classes who now put their money in the saving banks, getting therefore a nominal interest. These would be only too glad to get 4 per cent. or 5 per cent. on their money if the opportunity was put within their reach. At present they get a smaller return which represents but a portion of the income the savings banks derive from investing the peoples' savings largely in railway securities.

"Intelligent regulation will solve one of the largest problems with which the railways now have to deal. Intelligent co-operation on the part of the railways will be a help to this solution and issuance of railway securities in denominations that will put them within the reach of the working class of moderate means will be another."

Ships Favored at New Orleans.

By constitutional amendment, approved November 8, the state of Louisiana will exempt oversea steamship lines domiciled or to be domiciled at a Louisiana port from all municipal parish and state taxes during a period of fifteen years. J. W. Porch, father of the measure, believes that the people of the Mississippi valley will finance at least one big steamship line between New Orleans and China, and the Philippines, Japan and other Far Eastern countries. Two extensive projects are under consideration for the installation and operation of steel barge lines between Kansas City, St. Louis and New Orleans. The commissioners of the port of New Orleans now have authority to issue bonds and with the proceeds erect and operate a system of modern waterside machine equipped warehouses, the idea being to utilize the public credit and the publicly owned harbor frontage to the maximum extent in upbuilding Mississippi valley commerce through the port of New Orleans.

Long and Short Haul.

The long and short haul clause of the amended act bill will be discussed before the Interstate Commerce Commission at its offices in Washington November 28, according to a notice issued by the commission.

The following questions arising under the fourth section of the act to regulate commerce as amended June 18, 1910, will be considered:

Does this section apply to export and import rates, transshipment rates, proportional rates, excursion rates, commutation rates, or any of them?

Is it a violation of this section if a carrier maintains rates which are in conformity with the rule of the fourth section, and in connection therewith provides for absorption of switching charges on competitive business but not on non-competitive business, with the result that the rate from the more distant competitive point, minus the switching charge which is absorbed, makes a total charge less than that on like shipment from a shorter distance, intermediate, non-competitive point, plus a

switching charge which would have to be paid on the non-competitive business to reach the same delivery point?

If a carrier has been given authority to maintain from the non-competitive intermediate points rates higher than from more distant competitive points, and a new intermediate station is opened, would it violate this section of the act, or the permission, if the carrier established rates to and from the new station the same as, or in harmony with, the rates to and from the nearest intermediate station?

If a carrier is authorized to maintain rates to or from a given point, which are not in conformity with the fourth section, and it constructs a branch-like connection with the main line at such point, and establishes rates to and from stations on such branch line by adding locals or arbitraries to the rates to and from the junction point, would such branch-line rates be in violation of the law or the permission?

The commission will not at this session consider the merits of any particular application or class of applications for relief under the provisions of the fourth section, but only the meaning and application of the section in the respects above mentioned.

INTERSTATE COMMERCE COMMISSION.

The Interstate Commerce Commission has appointed John T. Marchand as an attorney. Mr. Marchand was formerly for several years in the service of the commission in the investigation of criminal offences against the Interstate Commerce law.

Reparation Awarded.

Nelson D. Stilwell v. Lehigh & Hudson River Railway et al. Opinion by Commissioner Cockrell:

Tariff of initial carrier naming advanced rate did not properly cancel lower rate named in tariff of another carrier to which rate initial carrier was a party. (19 I. C. C., 404.)

Fred W. Green, receiver for Ionia Wagon Co., v. Alabama Great Southern et al. Opinion by Commissioner Prouty:

Rates on hickory spokes from Fort Payne, Ala., and Chattanooga, Tenn., to Cincinnati, Ohio, found unreasonable when compared with the rates on hard-wood lumber. (19 I. C. C., 458.)

Complaints Dismissed.

S. T. Fish & Co. v. New York, Chicago & St. Louis et al. Opinion by Commissioner Cockrell:

Complaint of misrouting not sustained. (19 I. C. C., 452.)

Sikeston Mercantile Co. v. Boston & Maine et al. Opinion by Commissioner Cockrell:

Complainant's allegation of misrouting not sustained. (19 I. C. C., 422.)

Proposed Hearings and Suspensions of Tariffs.

The commission is to give hearings next week on the question of issuing regulations for telephone, telegraph and cable companies, in accordance with the law passed last June. None of these companies has as yet filed tariffs with the commission.

The commission has suspended until March 31, tariffs filed by the Illinois Central and other roads showing increased rates on freight between the Mississippi and Missouri rivers. These tariffs are those restoring reductions which were made in the Burnham-Munger case.

The commission has suspended tariffs filed by the Chesapeake & Ohio on coal to Toledo, Ohio.

The commission has suspended until March 1 tariffs filed by the railways on freight from Ohio river points to New Orleans.

Misrouting Justified.

S. M. Isbell & Co. v. Lake Shore & Michigan Southern et al. Opinion by Commissioner Cockrell:

Initial carrier held not responsible for misrouting shipment via an Ohio river crossing taking higher combination than might have been obtained via another Ohio river crossing using, as a factor, a special commodity rate south of the river, the initial carrier not being a party to the rates named by the line south of the river. Complaint dismissed. (19 I. C. C., 448.)

Terminal Rates from Central to Trunk Line Territory.

Albert Preston v. Chesapeake & Ohio et al. Opinion by Commissioner Clark:

A rate of 20.5 cents charge from Rockhouse, Ky., to Brockwayville, Pa., previous to July, 1907, is attacked, because it was higher than the rate from Buffalo and Salamanca to Rockhouse, Brockwayville being an intermediate point. Buffalo and Salamanca are terminal rate points between Central Freight Association and Trunk Line territory, and since the shipment moved before the amendment of the long and short haul clause and was not therefore a violation of the act, it was not unreasonable. This case affords no adequate foundation for a determination of the rate adjustment for this important territory. (19 I. C. C., 406.)

Rates on Bread and Cake.

Oak Grove Farm Creamery v. Adams Express Co. et al. Opinion by Commissioner Prouty:

Complainant alleges that defendants' rates on cake are unreasonable as compared with their rates on bread. Defendants may properly apply a somewhat lower rate on bread than on cake; but the present rates on cake are unreasonable and should not exceed the regular merchandise rates, excluding the weight of the hamper in which the cake is shipped.

Defendants' tariffs provide that the bread rate shall apply to mixed shipments of bread and cake, but not unless at least 50 per cent. of the shipment consists of bread. Complainant contends that this rule bars it from making mixed shipments, while it permits certain of its competitors who bake both bread and cake to obtain the bread rate upon shipments of bread and cake; held, that the above rule of defendants discriminates against complainant, and is unjust and unreasonable, and should be discontinued. (19 I. C. C., 454.)

STATE COMMISSIONS.

The Railroad Commission of Louisiana has reduced the present rate on piling from St. Tammany to New Orleans, which is 5½ cents per 100 lbs., and on cross ties from Rio to Slidell, which is 5 cents per 100 lbs., to 3 cents per 100 lbs.

The New York Public Service Commission, second district, has made an order requiring the Rutland Railroad to show cause at Albany on November 14 why it should not be required to run its train No. 6 on schedule time. An investigation of the running time of this train showed that for the period of 15 months from June, 1909, to and including August, 1910, at no time excepting during the month of June, 1909, has this train arrived on time at Chatham to exceed ten days in any month, and the delays have averaged from 20 to 38.2 minutes per day run.

The Railroad Commission of Louisiana, in a case brought by the Jahneke Navigation Company against the Texas & Pacific, finds that rates on gravel and sand from Thompson's Spur to New Orleans and intermediate points are too low and are unremunerative. The facts show, the commission believes, that a contractor, Thompson, built a spur from a sand and gravel pit to a connection with the Texas & Pacific, and that since he was able to ship a large amount of business, the railway company granted him very low rates on sand and gravel, making the rate theoretically open to any one; but since Thompson owned the only gravel pit at Thompson's Spur, from which the rate applied, in practice the rate of \$12 a carload was not remunerative and discriminated against other producers of gravel. The rate had been in effect for five years without any complaint against it, and the defendants claimed that this rate was fixed by water competition.

The Pennsylvania State Railroad Commission has decided that the charge of 80 cents per ton for the transfer of freight between industrial sidings on the Pennsylvania Railroad and the lines of the Philadelphia Reading at Harrisburg is unreasonable. One of the points made by the defendants was that it was necessary to charge a high rate for the transfer of freight from industrial sidings located on its own lines to the lines of its competitor so as to prevent the routing of freight over the competitor's line in preference to the company's own line. The

commission holds that the connecting carrier has no right to dictate the rout of incoming or outgoing shipments; its only privilege is to direct the movement asked of its own lines and to charge and receive just remuneration. The commission is not unmindful of the fact that a railway company's control of its terminals is so absolute that it can refuse to receive shipments near its terminals from a competing line for delivery at its terminals; but that has reference to delivery at its own proper terminals and not on a private siding of an industry located on its lines in such terminal districts. The commission, being without power to order, recommends that the transfer of carloads of sixth-class freight be reduced from 80 cents to 35 cents per ton.

The Railroad Commission of Louisiana, on November 23, 1910, will consider the adoption of a uniform mileage tariff of rates to apply on shipments of lumber, staves, and stave bolts, and the following rates are proposed:

Distances.	Car Loads.	Rates.
25 miles and less	5c.
50 miles and over 25	5½c.
75 miles and over 50	6c.
100 miles and over 75	6½c.
125 miles and over 100	7c.
150 miles and over 125	8c.
175 miles and over 150	8½c.
200 miles and over	9c.

The Railroad Commission of Louisiana, will, at a general session to be held November 22, 1910, consider the adoption of a uniform mileage tariff of rates on sand and gravel, between points in the state of Louisiana, at the following rates:

Single Line Rates.	Car Loads.	Cents.
25 miles and less	1
75 miles and over 25	1½
125 miles and over 75	2
150 miles and over 125	3
175 miles and over 150	4
200 miles and over 175	5
225 miles and over 200	6
250 miles and over 225	6½
275 miles and over 250	7
300 miles and over 275	7½
Over 300 miles	8

The Public Service Commission, second district, has ordered the New York Central and Hudson River Railroad Company to change the time of its passenger train No. 72, known as the Albany accommodation, so that it will leave Utica at 5:10 P. M. instead of 6:05 P. M., and stop at the stations now accommodated on its present schedule. The company is given the option of either changing the time of this train or running another train upon the time ordered. The change is required to be put into effect on or before Sunday, November 20. The order was made following the complaint of William Schermerhorn, et al of St. Johnsville and other points along the line between Utica and Albany. Complainants are workmen living in the village of Fort Plain, etc., and employed in the city of Little Falls. They are obliged to use train No. 72, and that under the present arrangement they are obliged to wait an hour before any train can take them to their homes, making them arrive there at a late and inconvenient hour.

The New York Public Service Commission, second district, has ordered the Delaware & Hudson in order to accommodate passenger travel at Gansevoort, Saratoga county, to run, beginning November 14, 1910, its present passenger train No. 71 at Saratoga Springs instead of at Fort Edward, for one trip and that train for that trip shall leave Saratoga Springs at 6:05 A. M., and to extend the running of its train No. 86 for one trip from Fort Edward to Saratoga Springs, train reaching Saratoga Springs at 6:55 P. M. The order followed a complaint made by 28 residents of Gansevoort, who stated that they were daily commuters and working at Fort Edward, Hudson Falls and Glens Falls, and that by reason of the taking off of trains Nos. 71 and 86 they were unable to continue their residence at Gansevoort. The trains in question had been running from six to eight years prior to September, when they were taken off.

COURT NEWS.

The four cases involving the constitutionality of the employers' liability law passed by Congress in 1908, which are now before the Supreme Court of the United States, will not be argued until January 16.

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

R. T. Fullwood has been appointed auditor of the Western Allegheny, with office at Pittsburgh, Pa., succeeding R. S. Wilson, resigned to go into other business.

S. J. Beardslee, claim agent of the Minneapolis & St. Louis and the Iowa Central at Minneapolis, Minn., has been appointed claims attorney, with office at Minneapolis. S. W. Patton succeeds Mr. Beardslee.

G. G. Lacy, vice-president of the St. Joseph & Grand Island at St. Joseph, Mo., has been elected president, with office at St. Joseph. The office of president has been vacant since the retirement of W. T. Van Brunt in 1908.

The following officers of the Chesapeake & Ohio have had their authority extended over the Hocking Valley: F. M. Whitaker, vice-president in charge of traffic; G. B. Wall, assistant to president, and L. F. Sullivan, comptroller, all with offices at Richmond, Va.

J. E. Muhlfeld, whose election as vice-president and general manager of the Kansas City Southern with office at Kansas City, Mo., has been announced in these columns, was born September 18, 1872. He graduated from Purdue University in December, 1892. He began railway work in May, 1890, as assistant to the civil engineer of the Peru & Detroit, now the Winona Interurban Railway, and resumed his college work at Purdue in October of the same year. From June to September, 1891, and for the same months of 1892 he was employed at the Ft. Wayne shops of the Wabash as a machinist apprentice. After graduation he returned to the Wabash as a machinist apprentice and was promoted as follows: To machinist and gang foreman, locomotive engineer and fireman, roundhouse foreman, general foreman of the locomotive and car department at Tilton, Ill., and general foreman on the Buffalo division at St. Thomas, Ont. In February, 1899, he was appointed master mechanic on the Western division of the Grand Trunk at Port Huron, Mich., and two years later was transferred with the same title to Montreal, Que. Later, in 1901, he was made superintendent of machinery and rolling stock of the Canadian Government roads at Moncton, N. B., which position he held for a year. He was then made assistant to the general superintendent of motive power of the Baltimore & Ohio, and from February to June, 1903, was superintendent of motive power of the same road at Newark, Ohio. He was then appointed general superintendent of motive power, which position he held until November, 1908. From the latter date until the date of his recent election he has been doing steam railway expert work.

Operating Officers.

L. W. Berry has been appointed superintendent of the New York & Long Branch, with office at Long Branch, N. J.

G. E. Geer has been appointed train master of the Western division of the Chicago Great Western, with office at Clarion, Iowa.

W. G. Curren has been appointed superintendent of car service of the Kansas City Southern, with office at Kansas City, Mo., succeeding J. P. Spivey, assigned to other duties.

William B. Jones, superintendent of transportation of the Chicago, Indianapolis & Louisville, with office at Lafayette, Ind., has resigned, and that office has been abolished.

W. W. Waits has been appointed superintendent of terminals of the Southern Railway, in charge of the Atlanta, Ga., terminals, with office at Inman yards, succeeding G. A. Bradley, resigned.

T. A. McKinstry, assistant superintendent on the Salt Lake division of the Southern Pacific lines east of Sparks, at Ogden, Utah, has been transferred to Imlay, Nev., succeeding B. A. Campbell, resigned. H. W. Wistner succeeds Mr. McKinstry.

John McGie, division superintendent of the Chicago, Rock Island & Pacific at El Reno, Okla., has been appointed superin-

tendent of the Chicago, Rock Island & Gulf, with office at Ft. Worth, Tex., succeeding M. McKernan, resigned. Frank N. Tinsman, trainmaster on the Oklahoma division, succeeds Mr. McGie.

E. J. Wright, assistant superintendent of the Western division of the New York Central & Hudson River, at Syracuse, N. Y., has been appointed superintendent of the Hudson division, with office at New York, succeeding F. T. Slack. H. E. Brown, assistant superintendent of the Hudson division, at New York, succeeds Mr. Wright, and D. B. Fleming, trainmaster at West Albany, succeeds Mr. Brown.

E. Raymond, division superintendent of the Atchison, Topeka & Santa Fe at Chillicothe, Ill., has been appointed general superintendent of the western district of the eastern lines, with office at Newton, Kan., succeeding H. W. Sharp, appointed division superintendent at Newton. George E. Ayer, division superintendent at Newton, succeeds Mr. Raymond. Payson Ripley, trainmaster at Newton, has been appointed a division superintendent, with office at Chanute, Kan., succeeding J. L. Barnes, appointed general agent, with office at Chanute.

Traffic Officers.

Le Grand White has been appointed a traveling freight agent of the Baltimore & Ohio, with office at Baltimore, Md.

J. H. Cummings, traveling freight agent of the Chicago, Great Western, at Lincoln, Neb., has been transferred to Omaha.

W. C. B. Allen has been appointed general agent of the Kansas City Southern, with office at Mena, Ark., succeeding Guy B. Wood, promoted.

W. A. Wayman, agent of the Erie Railroad, at Omaha, Neb., has been appointed agent at Kansas City, Mo., succeeding R. G. Cook, promoted.

J. H. Meglemry has been appointed traveling freight agent of the Cleveland, Cincinnati, Chicago & St. Louis, with office at Birmingham, Ala., succeeding W. A. Shropshire, resigned.

C. F. Smith, traveling freight agent of the Louisiana Railway & Navigation Company at Oklahoma City, Okla., has been appointed general agent, with office at Dallas, Tex., succeeding E. L. Whitney, assigned to other duties. P. J. Rupp succeeds Mr. Smith.

L. H. Saunders, contracting freight agent of the Missouri, Kansas & Texas at Houston, Tex., has been appointed a traveling freight agent, with office at Houston, succeeding W. D. Morgan, promoted.

Wm. Penn, traveling passenger agent of the Pennsylvania Lines at Des Moines, Iowa, has been appointed a district passenger agent, with office at Terre Haute, Ind. E. F. Copperthwaite succeeds Mr. Penn.

H. B. Holbert, division freight agent of the Chicago Great Western at St. Paul, Minn., has been appointed division freight agent, with office at Des Moines, Iowa, succeeding Frank Cassidy, assigned to other duties.

E. W. Green, and not J. M. Green, has been appointed a commercial agent of the Missouri, Kansas & Texas, with office at Pittsburgh, Pa., succeeding Paul Gruber, resigned. This corrects an item in our issue of November 4, page 885.

Clyde Hogsett has been appointed a traveling freight agent of the Missouri Pacific, with office at Salt Lake City, Utah, succeeding Fred J. Kemper, whose appointment as traveling freight agent at Cincinnati, Ohio, has been announced in these columns.

Claude C. Hill, district passenger agent of the Minneapolis, St. Paul & Sault Ste Marie at Chicago, has been appointed general traveling agent, with office at Chicago, succeeding R. S. Elsworth, transferred to Minneapolis, Minn., as city passenger agent.

John C. Stone, district freight and passenger agent of the Southern Pacific at Sacramento, Cal., has been appointed chief clerk in the traffic department at San Francisco, succeeding E. W. Clapp, promoted. James O'Gara, city ticket agent at San Francisco, succeeds Mr. Stone.

C. H. Mann, city ticket and passenger agent of the Louisville & Nashville at Mobile, Ala., has been appointed a traveling passenger agent, with office at Houston, Tex., succeeding John F. Sullivan, resigned to accept service with another company. R. J. Hamilton succeeds Mr. Mann.

L. W. Price, division passenger agent of the St. Louis & San Francisco at Joplin, Mo., has been appointed general baggage agent, with office at Springfield, Mo., succeeding W. M. Dyer, assigned to other duties. F. R. Newman, district passenger agent at Denver, Colo., succeeds Mr. Price, and W. L. Evans, district passenger agent at Jacksonville, Fla., succeeds Mr. Newman.

Rolla R. Mitchell, whose appointment as general freight agent of the Kansas City Southern, with office at Kansas City, Mo., has been announced in these columns, was born October 30, 1874, at Ottawa, Kan. He graduated from the University of Kansas in 1896, and began railway work in September, 1897, with the Kansas City, Pittsburg & Gulf as a clerk in the general freight office. He was later made contracting agent at Texarkana, Tex., and in 1900 was appointed general agent at Memphis, Tenn., of the Kansas City Southern, successor of the Kansas City, Pittsburg & Gulf. The next year he was transferred to Shreveport, La., where he remained until 1906. He was then appointed assistant general freight agent, with office at Texarkana, from which office he was promoted to general freight agent.

Engineering and Rolling Stock Officers.

William Michel, engineer maintenance of way of the Hocking Valley, has been appointed chief engineer with office at Columbus. He will also continue to perform the duties of the engineer maintenance of way.

The jurisdiction of W. D. Taylor, chief engineer of the Chicago & Alton, the Toledo, St. Louis & Western, the Minneapolis & St. Louis and the Iowa Central, has been withdrawn from the two latter roads, and R. G. Kenly, the engineer of maintenance of way of the Minneapolis & St. Louis and the Iowa Central, has been appointed chief engineer of those roads, with office at Minneapolis, Minn.

G. W. Preston, roadmaster of the St. Louis & San Francisco at Amory, Miss., has been transferred to Birmingham, Ala., succeeding J. H. Cooper, deceased. J. T. Gannon has been appointed acting roadmaster at Amory, succeeding Mr. Preston.

Purchasing Officers.

The jurisdiction of E. S. Wortham, purchasing agent of the Chicago & Alton, the Toledo, St. Louis & Western, the Minneapolis & St. Louis and the Iowa Central, has been withdrawn from the two latter roads, and W. G. Manchester has been appointed purchasing agent and general storekeeper of the Minneapolis & St. Louis and the Iowa Central, with office at Cedar Lake (Minneapolis), Minn. L. A. Williams will continue as storekeeper of the Minneapolis & St. Louis, with office at Minneapolis; and H. V. V. Chapman as storekeeper of the Iowa Central, with office at Marshalltown, Iowa.

OBITUARY.

Ashley J. Elliott, manager of the Illinois and Iowa Demurrage Bureau and secretary of the Peoria division of the American Association of Railway Superintendents, with office at Peoria, Ill., died at Peoria on November 10.

Frank Grundy, president of the Temiscouata Railway and vice-president of the Quebec Central, died November 14 at his home in Sherbrooke, Que. Mr. Grundy was born March 28, 1836, at Bury, Lancashire, England. He began railway work in 1850 as a clerk on the Manchester, Sheffield & Lincolnshire. From 1851 to 1854 he was with the East Lancashire Railway, and then for about nine years was with the Oxford, Worcester & Wolverhampton, afterwards the Western Midland Railway, and now the Great Western of England. From 1863 to 1868 he was manager of the Mid-Wales and Swansea & Caermarthen railways and Milford docks. He was appointed general manager of the Quebec Central of Canada in 1889 and five years later was made vice-president of that road.

Railway Construction.

New Incorporations, Surveys, Etc.

BRITISH COLUMBIA & ALASKA.—See British Columbia Railway & Development Company.

BRITISH COLUMBIA RAILWAY & DEVELOPMENT CO.—This company was incorporated in Delaware with \$12,000,000 capital, and has secured control of the British Columbia & Alaska Railway, which was given a charter in March of this year to build from Vancouver, B. C., to the northern boundary of that province, over 1,000 miles. A reconnaissance of the entire line has been made, which shows that the proposed line will have easy grades. Two engineering parties, under the supervision of L. M. Rice, of Seattle, Wash., and Vancouver, have completed surveys recently, over the section that will connect the Canadian Pacific with the Grand Trunk, about 300 miles, and it is expected to begin construction work on this section early next spring. The directors include: J. O. Clifford and J. W. Kendrick, Chicago.

CAPE GIRARDEAU, CHARLESTON & HICKMAN.—An officer writes that contracts have been let to Louis Houck, Cape Girardeau, Mo., to build from Kelso or Ancil, at a point near the approach of the Southern Illinois & Missouri bridge over the Mississippi river, south via Charleston and Anniston to Dorena, opposite Hickman, Ky., 50 miles. G. Houck, president, and J. F. Brooks, chief engineer, Cape Girardeau.

CHICAGO, INDIANA & SOUTHERN.—The double-tracking work between Indiana Harbor, Ind., and Danville, Ill., 45 miles, it is said, is nearing completion.

CHICAGO, MILWAUKEE & PUGET SOUND.—See Chicago, Milwaukee & St. Paul.

CHICAGO, ROCK ISLAND & PACIFIC.—An officer writes that surveys are being made for a line from the Winterset branch at Carlisle, Iowa, southeast to Dallas, Marion county. The construction of the line has not yet been authorized.

CHICAGO, MILWAUKEE & ST. PAUL.—The report of this company for the year ended June 30, 1910, shows that work is under way on additional second main track on the La Crosse division, from Camp Douglas, Wis., to West Salem, about 44 miles; on the River division, from Wabasha, Minn., to Richmond, 46 miles, and on the Prairie du Chien division, from Elm Grove, Wis., to Blue Mounds Junction, about seven miles. Some grade reduction work and improvement of alinement was also carried out. During the year 37 steel bridges, aggregating 4,411 ft. in length, were built, replacing 3,981 ft. of wooden bridges, 964 ft. of iron bridges and 366 ft. of embankment; 433 wooden culverts were replaced with iron; about 2.9 miles of pile bridges were filled with earth, 106 bridges having been completely filled and 53 reduced in length by filling. Construction work has been under way during eleven months on branch lines for the Chicago, Milwaukee & Puget Sound as follows:

Moreau Line.—From Moreau Junction, S. D., 3.8 miles west of Mobridge, southwesterly and westerly to Isabel, 58.4 miles. This line has been opened for operation.

Cheyenne Line.—From Cheyenne Junction, S. D., on the Moreau Line, 25.7 miles from Mobridge, southerly and westerly to Faith, 106.1 miles. It was expected to finish the work on this line in November.

Cannon Ball Line.—From McLaughlin, S. D., northwesterly to New England, 133.7 miles; the work is about finished.

St. Maries Line.—From St. Maries, Idaho, southeasterly through Bovill to Elk river, 71.7 miles. This line was finished about June 30.

Coeur d'Alene Line.—This line is being built by a subsidiary company, the Idaho & Western, from Dishman, a suburb of Spokane, Wash., easterly to Coeur d'Alene, Idaho, 25.6 miles. It is expected to have the work finished about December 15.

Warden Line.—From Warden, Wash., northeasterly to Hamlin, 47.5 miles. The construction work is finished.

Everett Line.—From Moncton, Wash., northwesterly to Everett, 57.8 miles. It is expected that work on this line will be finished about April 1, 1911.

Enumclaw Line.—From Iolathe, Wash., southerly to Enumclaw, 13.1 miles. Work on this line has been finished.

Grays Harbor Line.—From McKenna, Wash., on the Tacoma Eastern, westerly to Grays Harbor branch, 81.4 miles; from McKenna to Portola, 33.3 miles, was built by the C. M. & P. S. The section from Portola to Grays Harbor, 48.1 miles, is being built by the Oregon & Washington for the joint account of that company and the C. M. & P. S. Work has been finished to Cosmopolis, 72.3 miles. The construction of bridges across the Chehalis and Hoquiam rivers will delay the completion of the line between Cosmopolis and Grays Harbor for several months. (See report of this company elsewhere in these columns.)

COLORADO & SOUTHERN.—The report of this company for the year ended June 30, 1910, shows that construction work on the new passenger terminal at Houston, Tex., for the Trinity & Brazos Valley has progressed, and it is expected to have the work finished within a few months. The Stamford & Northwestern began operating an extension from Stamford, Tex., to Jayton, in September, 1909, and in the following month the road was completed from Jayton to Spur, a total of 82.5 miles, all of which is now in operation. Heavier rail was laid at various places, replacing lighter sections. A viaduct to carry the tracks over 20th street, in the city of Denver, Colo., in being built jointly with other railway companies, and it is expected that the work will be finished next year. An agreement has been made with the city of Denver for the construction of a subway to be built jointly with other railway companies at West Alameda avenue; this work is to be finished next year. Property was bought in the city of Cheyenne, Wyo., to make a connection with the Chicago, Burlington & Quincy at Capital avenue, and the work has been finished. Property has been bought in Greeley, Colo., for the purpose of making a connection with the C., B. & Q., and extending the yard room and facilities at that place. Because of the congestion of business between Pueblo and Walsenburg, between which places the C. & S. has joint facilities with the Denver & Rio Grande, an agreement was entered into with that company whereby each company should build a line for itself and enter into joint use of the two tracks as a double-track line between Southern Junction and Walsenburg Junction. Contracts have been let and the work, is now under way. It is expected to have this improvement finished before September, 1911. (See report of this company elsewhere in these columns.)

DENVER SIDE CONNECTING.—This company has applied for incorporation with \$10,000 capital and headquarters at East St. Louis, Ill. The plans call for a line from the southeastern limits of East St. Louis, between the right-of-way of the Southern Railway, State street, and the Illinois Central, to the Mississippi river. H. S. Kramer, R. P. Munger and A. W. Baltz are interested.

EL PASO & SOUTHWESTERN.—This company will begin work in January, it is said, on a line to Phoenix, Ariz., and Yuma. The line is eventually to be extended west via Imperial, Cal., to San Diego. (July 1, p. 54.)

GRAND TRUNK PACIFIC.—According to press reports, the first section of 90 miles from the Pacific coast at Prince Rupert, B. C., east, will be opened for passenger and freight traffic before December 1.

HAWKINSVILLE & EASTERN.—An officer writes that track laying is to be started in about two weeks from Hawkinsville, Ga., northwest via Grovania, and Perry to Fort Valley, about 40 miles. Grading has been finished on about 14 miles. T. B. Ragan, president, Hawkinsville, and C. J. Chenworth, engineer.

INDIANA ROADS.—The Commercial Club of Richmond, Ind., has taken action to encourage the building of traction lines north and south from that place, connecting important points now without railway communication. This includes the construction of lines reaching Connersville and Liberty and Hamilton, Ohio, on the south, and Winchester, Ind., Union City, Portland and Muncie on the north.

INDIANAPOLIS & CINCINNATI TRACTION.—John J. Appel, Indianapolis, Ind., as trustee for a committee, recently bought the property and franchises of this company. It is said that the new owners will build an extension from Connersville southeast to Cincinnati, Ohio.

IRON MOUNTAIN, ST. GEORGE & GRAND CANYON.—According to press reports, surveys are being made from Beaver, Utah, south via Milford to Cedar City, and construction work is to be started as soon as the surveys are finished. The company was organized to build from Thermo, Beaver county, south to Cedar City and Kanarraville, thence southwest via St. George to the Santa Fé, in the Hualapai valley at or near Kingman, Ariz., about 240 miles, with a long branch below Kanarraville, southeast through an oil and timber section to the grand canyon of the Colorado river. Some short branches are also to be built from near Cedar City to coal fields and iron mines in Iron county, Utah. E. M. Burgess, Salt Lake City, is the engineer in charge. (April 1, p. 918.)

JANESVILLE TRACTION.—This company has been incorporated in Wisconsin with \$125,000 capital, to build railways. The incorporators include: T. Nolan, W. Murphy and J. L. Burke.

KINDER & NORTHWESTERN.—An officer writes that this company has completed 10 miles of line from Kinder, La., to timberlands. The line will carry farm products, naval stores and lumber products. A. J. Peavy, president, Shreveport, La.

LOS ANGELES PACIFIC.—An extension is to be built from Hollywood, Cal., to Van Nuys, at a cost of \$500,000.

MICHIGAN CENTRAL.—Work is said to be under way four-tracking the line from Calumet Park, Ill., south to Gibson, Ind. Large transfer yards are also to be added to the existing yards at Gibson.

NATIONAL RAILWAYS OF MEXICO.—A contract is said to have been given to the Campania Bancaria, Mexico City, Mex., for building the connecting line from Penjamo, Guanajuato, on the Guadalajara division, south to Ajuno, Michoacan, 75 miles, and work is to be started at once. E. R. de Steigneur is in charge of the work. Thomas Williams is general manager of the construction department of the Campania Bancaria. (Oct. 7, p. 674.)

The narrow gage Acambara-Uruapan line is now being shortened and widened, it is said. Bell & Semmes, Mexico City, are the contractors. It is expected to have the work finished by March, 1911.

NEW YORK ROADS.—Calvin Tompkins, commissioner of docks and ferries of the city of New York has applied to the New York Public Service Commission, First district, for a certificate of public convenience and necessity to build a line along the water front in the borough of Brooklyn, from Fulton street, southerly to 69th street. The plans provide for the operation of railways in connection with the water front and warehouses. The first work to be carried out will be the construction of the two 1,200-ft. piers.

NEW YORK, CHICAGO & ST. LOUIS.—This company has work under way, it is said, building culverts to carry double-tracks on the section from Chicago to Fort Wayne, Ind., preparatory to double-tracking the line between these places.

NORTHERN PACIFIC.—This company is said to have appropriated \$250,000 to complete the double-track from Spokane, Wash., southwest to Wins, five miles. Work on this improvement is expected to be finished during November.

OHIO, KENTUCKY & VIRGINIA.—Incorporated in Kentucky, with \$100,000 capital, to build about 300 miles of line. The projected route is from Manchester, Ohio, on the north side of the Ohio river, southeast through eastern Kentucky to Morgan county. The incorporators include: W. H. Howe and F. S. Clarke, Brooklyn, N. Y.; W. Browning, B. R. Hutchusft, W. F. Downing, Lexington, Ky., and Thomas Atkinson, Middlesborough.

PECOS VALLEY SOUTHERN.—According to press reports, track laying is now under way between Saragosa, Tex., and Balmorhea, and work is to be started at once on an extension from Balmorhea, south. The company was organized to build from Pecos, south via Saragosa and Balmorhea to the San Salmon. The first section of 30 miles was recently opened for traffic. L. W. Anderson, chief engineer, Pecos. (Aug. 19, p. 333.)

PRAIRIE FARM & SOUTHWESTERN.—An officer writes that contracts have been let for building from Prairie Farm, Wis., south-

west to Emerald, about 22 miles. G. E. Scott, president and J. H. Thomas, Prairie Farm. (Oct. 7, p. 672.)

QUEBEC RAILWAY, LIGHT, HEAT & POWER CO.—This company, which operates lines in the city of Quebec, also a line to Montmorency Falls and St. Ann de Beaupre, on the north side of the St. Lawrence river, it is understood, is planning to build an extension from St. Joachim, down the north shore of the St. Lawrence river, to Murray bay.

ROCKINGHAM RAILROAD.—An officer writes that a contract has been given to H. M. Allport & Son, Richmond, Va., and work is now under way from Roberdell, N. C., southwest to Rockingham, thence southeast to Gibson, 22 miles. J. P. Leak, president, Rockingham. (June 14, p. 1141.)

SAN JOAQUIN VALLEY ELECTRIC.—This company is pushing construction work, it is said, on a line from Stockton, Cal., southeast to Modesto, about 30 miles. Grading has been finished to Ripon and bids were recently opened for putting up a 200-ft. steel and concrete bridge over the Stanislaus river at Ripon. H. S. Renwick, president, New York, and M. L. Brackett, vice-president and general manager, Stockton, Cal.

SOUTHERN PACIFIC OF MEXICO.—The Mexican government has just granted this company a concession to construct a line between Guadalajara, Mexico, and Mexico City, about 325 miles. The line now under construction down the Pacific slope will connect with the Ameca line of the National Railways of Mexico at Orendain. A contract was entered into recently with the National Railways of Mexico by which the Southern Pacific will operate its trains into Guadalajara over the 25-mile stretch of road from Orendain. It is stated that the Southern Pacific's proposed line will be built considerably to the south of the National Railways of Mexico's line and will be about 50 miles shorter than that company's line from Guadalajara to Mexico City. It will give the Southern Pacific a through line between Mexico City and the Pacific coast region of the United States. It is announced that construction work on the Guadalajara-Mexico City line will be started within the next few months. Since the rainy season ended the force of laborers on the Pacific slope line has been increased. The line will soon be finished into Tepic. Work has been in progress for some time on the section running west from Orendain. The rugged Sierra Madre range must be crossed between Orendain and Tepic, that section of the work will be expensive. It will consist chiefly of tunnels through the mountains and bridges across the deep barrancas. When the work between the Santiago river and Tepic is finished, a large part of the construction forces from that section will be put to work on the line between Guadalajara and Mexico City.

ST. LOUIS, ST. CHARLES & NORTHERN TRACTION.—Incorporated in Missouri with \$900,000 capital, to build from St. Charles, Mo., northwest to Laddonia, 70 miles, through the counties of St. Charles, Lincoln, Montgomery, Pike and Audrain. The incorporators include: R. E. Race, D. S. Stokes, Mexico; R. M. Hendershot, C. Pearson, C. B. Duncan, H. A. Stone, C. F. Butler, all of Middletown; W. J. Dunn, Silex, and H. E. Tige, Laddonia.

TEXAS ROADS.—Edward Kennedy, Houston, Tex., is back of a project to build a line from Vidalia, La., southwest, across the Mississippi river to Houston, Tex.

TIDEWATER & SOUTHERN (Electric).—An officer writes that grading work was started November 1, on a line from Stockton, Cal., southeast via French Camp, Lathrop, Ripon and Modesto, to Turlock, with another line from French Camp, east via Atlanta to Escalon, and two connecting branches between the main lines. Track laying is to be started next month. It is expected to have the line finished to French Camp some time in December and to Escalon, 22 miles, by March 1, 1911. There will be one 200-ft. steel bridge and a 500-ft. trestle. J. H. Wallace, president, Stockton. (Nov. 4, p. 887.)

YREKA RAILROAD.—An officer of this company, which operates an eight-mile line from Yreka, Cal., east to Montague, writes that plans are being made for building an extension from Yreka southwest via Fort Jones, Greenview and Etna Mills, 44 miles. There will be one short steel bridge, 10 trestles and one tunnel. The work will probably be started early in 1911.

Railway Financial News.

BALTIMORE & OHIO.—The circuit court of Franklin county, Ohio, has affirmed the decision of the lower court giving the state of Ohio title to a three-mile strip of land along the Ohio canal in Cleveland, now occupied by tracks of the B. & O., and claimed to be owned by the Cleveland Terminal & Valley, a subsidiary of the B. & O. The railways claimed that the land belonged to them, basing their claim on a grant by the Cleveland city council, approved by the state legislature more than 20 years ago. The case is to be appealed to the supreme court.

BOSTON & MAINE.—In its petition to the Massachusetts Railroad Commission for permission to issue \$11,720,700 additional stock, the company says that the stock is to be sold at 110.

CINCINNATI, HAMILTON & DAYTON.—Holders of the first mortgage 5 per cent. bonds of the Dayton & Michigan, due January 1, 1911, are to be offered the privilege of extending their bonds for 20 years on terms to be announced later. The bonds are guaranteed by the C. H. & D., and the present mortgage securing them is a first lien on the road from Dayton, Ohio, to Toledo, 142 miles. This lien is to remain unimpaired.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—This subsidiary of the Southern Railway has declared a dividend, for a period not specified, of 2½ per cent. on the common stock, payable December 17 to stock of record December 10. This payment is made out of accumulated surplus. The company also declared the regular 1¼ per cent. quarterly dividend on the preferred stock, payable December 1 to stock of record November 26. This is paid out of accumulated income.

EUREKA & PALISADE.—This road is to be sold at public auction on November 29. It is said that a new corporation has been organized to bid in the road and to operate it. The road runs from Palisade, Nev., to Eureka, 84 miles.

INTEROCEANIC OF MEXICO.—The directors have declared the full dividend of 4 per cent. on the outstanding £1,000,000 (\$5,000,000) second preferred 4 per cent. stock. The only previous dividends were 1 per cent. paid in December, 1909.

MISSOURI, OKLAHOMA & GULF.—This company has secured track-age rights over the Texas & Pacific from Denison, Tex., to Sherman, 10½ miles. Stockholders of the Missouri, Oklahoma & Gulf Railway & Terminal, formed to build the M. O. & G. lines in Texas, are to vote January 3 on the question of making a mortgage to secure \$1,000,000 first mortgage bonds. The mortgage will cover the line between Red river, Tex., and Denison, and the bridge over the Red river and any additional lines built in Texas.

NEW YORK, NEW HAVEN & HARTFORD.—This company is to buy the franchises and equipment of the Milford & Woonsocket and the Milford, Franklin & Providence, both trolley roads. Both roads have been operated by the New Haven under lease, but direct ownership is now sought.

SPARKS WESTERN.—The property of this company was sold on November 9 to representatives of the Georgia & Florida for a price said to be about \$100,000. The road runs from Sparks, Ga., to Pineboro, 15 miles.

ST. LOUIS, BROWNSVILLE & MEXICO.—It is said that this company is to issue \$4,000,000 bonds, the proceeds to be used for improvements and for new equipment.

ST. LOUIS & SAN FRANCISCO.—There were offered for sale in Paris on November 8, \$5,000,000 New Orleans, Texas & Mexico division first mortgage 4½ per cent. bonds at 92½. The bonds are in denominations of \$100 (516 francs). The total authorized issue of these bonds is \$50,000,000, of which \$10,000,000 have been pledged to secure \$8,000,000 3-year 5 per cent. notes. The bonds now offered are part of the \$10,000,000 announced some time ago as placed abroad.

TOLEDO, ST. LOUIS & WESTERN.—James Steuart MacKie has been elected a director, succeeding James N. Wallace, resigned. E. J. Berwind has been elected a member of the executive committee, succeeding Mr. Wallace.

Supply Trade Section.

The Brighton Car Company, Chicago, was declared bankrupt by Judge Kohlsatt in the United States Circuit Court on November 10, and John N. Faithorn was appointed receiver.

The Isthmian Canal Commission will receive bids until November 25 for one Scotch marine boiler for the tug Bohio and also for 100 20-in. cast iron car wheels. (Circular No. 611-B.)

The Safety Car Heating & Lighting Company's office for the southeastern district at Washington, D. C., will be removed from the Home Life building to 506 Munsey building on November 15.

W. J. Fauth, formerly treasurer of the W. K. Kenly Company, Chicago, has severed his connection with that company and has opened an office at 310 Monadnock building, Chicago. Mr. Fauth will represent manufacturers of track and signal supplies.

The Pawling & Harnischfeger Company, Milwaukee, Wis., announces the opening of a branch office in the Washington building, Portland, Ore. The office is in charge of R. K. Morse, who has been a member of the engineering staff in the Milwaukee office.

Burton W. Mudge & Co., of Chicago, who make the Garland car ventilator, have appointed J. L. Phillips manager of their electric railway department. Recognizing the importance of ventilation on electric railways, Mudge & Co. have organized a department devoted to it.

The McKeen Motor Car Company, Omaha, Neb., has received orders for three additional gasoline motor cars. One of these, a 55-ft. car, is the second for the Woodstock & Sycamore Traction Company, and the other two, standard 70-ft. cars, are for the Denver, Laramie & Northwestern.

The W. F. Bossert Manufacturing Company, Utica, N. Y., has recently furnished the entire equipment of Bossert improved switch point adjusters for the electro-pneumatic interlocking plant of the Erie terminal at Jersey City, N. J. The order was placed through the Union Switch & Signal Company, who had the contract for the installation of the interlocking apparatus.

The Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, announces the appointment of Frank R. Goehler as its Chicago railway representative, with office at 1143 Marquette building. Mr. Goehler was connected with the purchasing department of the Atchison, Topeka & Santa Fe for four years and also with the Buda Company as factory business manager at its Harvey, Ill., works.

John I. Beggs, president of the Milwaukee Electric Railway & Light Company and interested in several other public service corporations, has been elected president and general manager of the St. Louis Car Company, of St. Louis, Mo., for the purpose of reorganizing the concern and placing it on a paying basis. The plan of reorganization provides that Mr. Beggs, David May, Moses Schoenberg and associates are to put \$850,000 into the corporation for which they are to receive seven per cent. cumulative preferred stock at par. The creditors are to take seven per cent. cumulative preferred stock in payment of their claims.

William G. Pearce, for some time vice-president and general manager of the Griffin Wheel Company of Chicago, having acquired an interest in the American Brake Shoe & Foundry Company, will on January 1, 1911, become associated with the latter concern as vice-president, with headquarters in New York. Mr. Pearce is well known in the railway supply world, having served for a number of years as auditor of disbursements, general purchasing agent, assistant to the president, and general manager of the Northern Pacific, until his resignation from the latter position in 1902, when he became vice-president of the Griffin Wheel Company. It is stated that Mr. Pearce will retain his considerable financial interest in the Griffin Wheel Company and continue as a member of its board of directors.

The American Rolling Mill Company of Middletown, Ohio, has completed a splendidly equipped research laboratory costing approximately \$40,000. Every appliance that will aid them in chemical and electrical development work has been included in the equipment. The company has recently secured the cooperation of Dr. Allerton S. Cushman, late of the office of good roads, Department of Agriculture, Washington, D. C. Dr. Cushman is establishing an institute in Washington for scientific research work along several lines. The American Rolling Mill Company has been fortunate to secure the result of his future individual research work that applies to every branch of the iron and steel business in which it is interested. Under the arrangement that has been effected Dr. Cushman will also give the work of its research laboratory personal supervision and direction.

Samuel Addison Megeath, vice-president and general manager of the Galena-Signal Oil Company, Franklin, Pa., has been



S. A. Megeath.

elected president and general manager, succeeding General Charles Miller, who becomes chairman of the board, succeeding J. C. Sibley, resigned on account of ill health. Mr. Megeath was born in Omaha, Neb., in 1869, soon after his parents had gone there from Virginia. After a college education he went into the stationery business. In 1895 he went to the Galena-Signal Oil Company and became vice-president, resigning from that office in March, 1907, to take charge of the foreign department of the company. On January 27, 1909, he was elected vice-president

and general manager, holding that office until his recent election as president. L. J. Drake, second vice-president, has been elected first vice-president, succeeding Mr. Megeath, and C. C. Steinbrenner, vice-president, has been elected second vice-president, succeeding Mr. Drake.

President William V. Kelley of the American Steel Foundries Company, in his annual report to the stockholders for the year ending July 31, 1910, says: "The gross sales for the year were \$17,173,740 and the gross earnings from operation of plants and other income after deducting manufacturing, selling, administration, head and district office expenses and management commissions, were \$1,896,072. The net income of \$1,030,220 applicable to surplus shown in the balance sheet is the remainder after deducting all interest and other charges, including \$1,199,983 for repairs and maintenance and \$355,693 for depreciation of fixed properties and also after appropriating \$162,570 for the sinking fund of the company's first mortgage bonds as required by the terms of the indenture securing them. The sinking fund appropriation, while properly charged against income, is in reality a setting aside of profits for liquidating the bonded debt, and the retirement of bonds from the fund benefits stockholders by increasing the value of the company's property. Since the close of the fiscal year shipments and earnings have been satisfactory, but orders on hand have shown a steady decrease from month to month for several months and there is as yet no definite betterment in sight, although there is a decided change in sentiment and the opinion seems to be that better business conditions will prevail within a short time."

The Western Electric Company's fiscal year ends with the current month, but the company's report will probably cover thirteen months in order to make the fiscal year hereafter correspond with the calendar year. October returns, gross, were 40 per cent. larger than last October, and the twelve months, ending with this November, will show gross sales of somewhat over \$61,000,000. In comparing this showing with the \$69,000,000 gross sales for 1906, which set the high record, it is of interest to note that this year a large business was done with customers outside the Bell system. This means that a much larger number of orders was handled, the average amount per order being less than one-half the average amount involved per order in 1906, resulting in an increase of operating expense per order. Taking into consideration the smaller margin of profit which has prevailed this year, with the increase mentioned in operating expenses, make it apparent that the ratio of net profits this year will be smaller than for 1906. Speaking of the improved showing which this year will show over last an officer of the company said: "The increase in the business is well distributed over the various classes of merchandise that the company handles and well distributed throughout the eighteen houses which represent the company in the United States. In telephone apparatus and cable business the increase has been gratifying and new uses to which the telephone is being put in connection with forest fire protection, railroad train despatching, in the household and in the factory are constantly adding to the demands upon the company for an increased output."

RAILWAY STRUCTURES.

BAY CITY, TEX.—According to press reports, the Railroad Commission of Texas will issue an order requiring the St. Louis, Brownsville & Mexico to repair at once the bridge across the Colorado river, between Bay City and Buckeye, Matagorda county.

BRISTOL, PA.—The Pennsylvania Railroad will build a station on Prospect street, near Beaver Dam road, on the change of line which has just been made through Bristol. The improvements to be carried out include the elimination of a number of grade crossings. It is expected to have the work finished by July, 1911.

GOSHEN JUNCTION, CAL.—The Southern Pacific is putting up a new roundhouse and making extensions to the yard at Goshen Junction.

HAMMOND, IND.—The Chicago, Indianapolis & Louisville is reported to have decided to build a passenger station to cost \$50,000.

MONTREAL, QUE.—An officer of the Grand Trunk writes regarding the new terminal at Montreal, that the question of constructing new terminals and elevated tracks has been under consideration for two or three years. Nothing definite has yet been decided in regard to carrying out the improvements.

PASADENA, CAL.—The San Pedro, Los Angeles & Salt Lake has finished a new station at Pasadena. The improvements cost \$15,000.

UTAH JUNCTION, COLO.—The Denver, Laramie & Northwestern is building a four-stall roundhouse and will also put up a repair shop.

FOREIGN RAILWAY NOTES.

Two great North American syndicates are in negotiation with the Government of Uruguay for constructing several long-distance railways of importance to the commercial relations of the republic with Argentina, through the city of Salto, linking up and with Brazil on the Rio Grande frontier. Señor O'Brien, the representative of these syndicates, recently visited Rio Grande do Sul to confer with Dr. Carlos Barbosa in reference to the projected junction of the Uruguay and Brazilian railway systems.

French investments in Brazil are estimated to amount to \$500,000,000, most of which has gone into the building of railways, docks and public works of various kinds.

Late News.

The items in this column were received after the classified departments were closed.

Contracts are to be let in January, 1911, by the Kansas & Missouri, to build from Fort Scott, Kan., south via Arcadia, Coalvale, Gross, Mulberry, Fuller, Nelson and Frontenac, to Pittsburgh, about 35 miles. Col. L. H. Phillips, president, 610 Broadway, Kansas City, Mo.

A. P. Prendergast, master mechanic of the Baltimore & Ohio at the Mount Clare shops, Baltimore, Md., has been appointed superintendent of motive power of the Baltimore & Ohio Southwestern, with office at Cincinnati, Ohio, succeeding John Hair, resigned.

The railway commission committee of the West Virginia board of trade has met and drafted a bill to be presented to the Legislature, providing for the creation of a state railway commission and containing other provisions relative to the regulation of railways.

The Southern Pacific and the Atchison, Topeka & Santa Fe, with twenty other companies have petitioned Judge Morrow of the United States Circuit Court for an injunction restraining the Interstate Commerce Commission from carrying out its order to cut commodities' rates. The rates are to go into effect on November 24. They were established after two years' investigation and were announced in the new class rate schedule on June 6.

An officer of the Stateline & Southern writes that the plans call for building from the Pennsylvania-West Virginia state line, following the west side of the Monongahela river, via Jintown, W. Va., Granville, West Morgantown and Lowesville, to a point near Rivesville, in Marion county, 32 miles. The work is to be carried out under the name of the Buckhannon & Northern. It has not yet been decided when contracts will be let for the work. J. Wood, president, Pittsburgh, Pa., and S. D. Brady, chief engineer, Morgantown, W. Va.

The Kansas City, Mexico & Orient has contracted for 8,000 tons of rails with the United States Steel Corporation. The corporation will also roll 15,000 tons for the Norfolk & Western. The Louisville & Nashville has contracted for 29,600 tons with the Tennessee Coal & Iron Company. The Carnegie company will roll 5,700 tons for the A. De Mayo Co. It is understood that the Lehigh Valley will place an order soon for 20,000 tons, and that the Interborough has placed an order with the Lackawanna Steel Company for 5,000 tons of rails for third rail purposes.

Commissioner Harlan, representing the Interstate Commerce Commission, held a hearing Wednesday at New York relative to complaints filed by commuters between New Jersey and New York. James R. Wood, passenger traffic manager for the Pennsylvania Railroad, submitted a table showing that fifty-trip commutation tickets are sold on every division of the Pennsylvania lines, with the exception of the New Jersey division, on the basis of 2 cents per mile. In the New Jersey zone this basis is much lower. From New Brunswick it is 1.73 cents per mile. The advance made in the fare from New Brunswick amounted to only 0.8 mills per mile.

The Appellate Division of the New York Supreme Court has handed down a decision in the case of the Delaware & Hudson against the Public Service Commission upholding the commission. The commission in June, 1910, made an order on the complaint of the Business Men's Association of Ticonderoga reducing the fare between Ticonderoga station and Ticonderoga village from 25 cents to 15 cents. The Delaware & Hudson sued out a warrant. The position taken by the company was that the commission could not alter a rate fixed by statute. It is the first instance in which the commission has sought to exercise its jurisdiction to lower a rate originally fixed by an act of the Legislature. The rate in question was fixed by an act of the Legislature when it granted the charter to build the road.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The *Louisiana & Arkansas* has ordered two American type locomotives from the Baldwin Locomotive Works.

The *Kansas City Terminal* has ordered 10 six-wheel switching locomotives from the Baldwin Locomotive Works.

The *Pittsburg, Shawmut & Northern* has ordered four consolidation locomotives from the Baldwin Locomotive Works.

The *Central Railway of Brazil* has ordered four consolidation locomotives from the American Locomotive Company. They will have 17 x 20 in. cylinders, 37-in. driving wheels, and will weigh about 93,000 lbs.

The *Chicago & Western Indiana* has ordered ten 0-8-0 switching locomotives from the Lima Locomotive & Machine Company. The engines will have the following dimensions:

Weight on drivers	202,300 lbs.
Total weight	202,300 lbs.
Diameter of cylinders	24 in.
Stroke of piston	28 in.
Diameter of drivers	57 in.
Type of boiler	Extended wagon top
Working steam pressure	180 lbs.
Firebox, length and width	108½ in., and 60¼ in.
Tank capacity for water	7,600 gals.
Coal capacity	14 tons
Wheel base	15 ft. 6 in.

Special Equipment.

Bell ringer	Golmar
Brakes	Westinghouse
Couplers	Sharon
Injector	Ohio
Journal bearings	Hewitt
Piston and valve-rod packings	L. & K. Metallic
Safety valve	Crosby
Sanding devices	Leach
Sight-feed lubricators	Ohio
Springs	Simplex
Stays	Tate flexible staybolts
Tires	Inter Ocean
Tubes	Mahoe
Draft gear	Cardwell "G"

CAR BUILDING.

The *Kansas City Southern* is reported in the market for new freight equipment. This report is unconfirmed.

The *Pennsylvania Lines West* are reported to have ordered 120 steel underframe box cars, 20 gondolas and 10 flat cars from the Pressed Steel Car Company.

The *Alton, Jacksonville & Peoria* (electric) is taking prices on six motor cars. H. A. Strauss, vice-president Falkman Construction Company, Chicago, is receiving the bids.

The *New York Central & Hudson River* is reported to have ordered 1,000 cars for fast freight service from the Merchants' Despatch Company. A large percentage of these cars will be of the refrigerator type.

IRON AND STEEL.

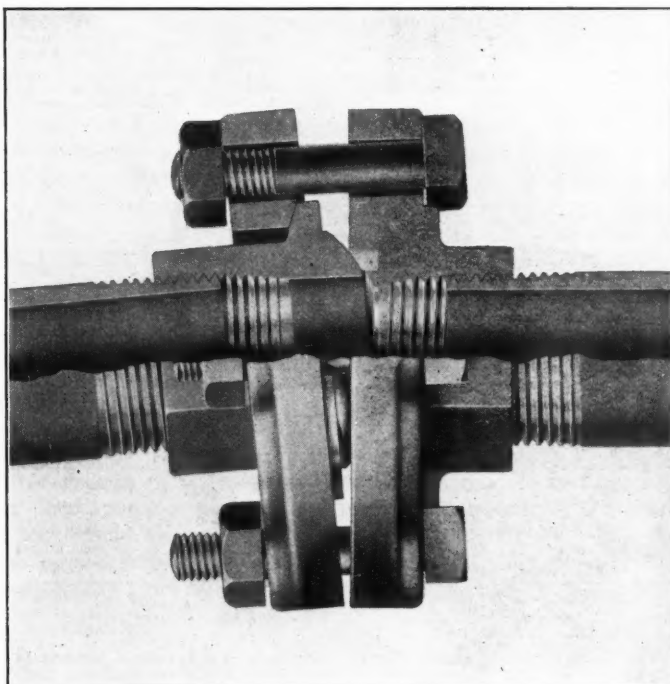
The *Delaware, Lackawanna & Western* is in the market for 10,000 tons of rails.

General Conditions in Steel.—The *Wall Street Journal*, in commenting on the rail output in this country for 1911, estimates that under normal conditions the renewals will amount to at least 2,250,000 tons, new construction 504,000 tons and export 370,000 tons, or a total of 3,124,000 tons. In 1908 the output was only 1,920,000, and in 1909 3,062,000 tons. In view of the fact that production in 1905, 1906 and 1907 averaged more than 3,650,000 tons a year, it is evident that the railways have been economizing for three years past, and if figures have any significance, are more in need of rails at the present time than at any previous period in years. John W. Gates, before leaving on a Western trip, is reported to have said: "There is every reason to believe that the steel industry will harden from now on. We do not expect any pronounced improvement in new business before February of next year. Conditions still strengthen generally, and in the meantime the steel companies will do a fair business. They are all making money on a basis of present operations, and if this can be kept up until the spring improvement sets in manufacturers will be satisfied. The conditions of the country do not warrant a gloomy view of the future. Our crops are the largest in history; money is getting easier, and the banks will be in a position to strengthen themselves from now on. The ex-

port movement is regulating itself, and the country is in less danger of legislation that has heretofore tended to disturb the business interests of the country. Next year should be one of the best business years the country has ever experienced."

Gasketless Flange Unions.

In making pipe connections much time may be saved when using a flange coupling if there is no gasket to be cut and fitted, and if no drifting is necessary to bring the bolt holes in line. These two features distinguish the Jefferson flange union shown in the illustration. A joint may also be made with the pipes out of alignment—another time saver—and such joints will be absolutely tight, as the seat is spherical and ground to a perfect fit. Another advantage of the spherically ground seat is that as the union is drawn up the pressure on the seat always acts in such a way that there is no tendency to warp or twist the parts of the union out of shape. The construction of the brass-to-iron seat is interesting. In the concave face of one member a channel is cut in which is embedded a ring of drawn brass tubing which projects slightly above the iron. The channel is so placed that there is a projecting lip of iron (patented) between the brass



Jefferson Gasketless Flange Union.

ring and the inside wall of the union. This lip serves two purposes—it diffuses the heat into the body of the fitting, thus preventing undue heating of the brass ring, and it prevents the fluid in the pipe from coming in direct contact with the brass seat. Furthermore, should the pipe be screwed in too far it will prevent any injury to the seat of the joint.

The brass ring fits tightly in the channel, being virtually one piece with the iron. The amount of brass, however, is so small that there is practically no difference in the expansion of the two metals. The brass-to-iron seat may be disconnected and connected a great number of times without injury. The absence of packing does away with the old blow-out trouble; the style of union shown successfully holds pressures up to 300 pounds. For pressures above this two heavier fittings, known as the heavy weight union and the extra heavy weight union are made. These are heavily bolted and guaranteed to stand a working pressure of 3,000 pounds per square inch. All styles are made of malleable iron. The loose collar has a machined wedge-shaped surface which comes in contact with a similar surface on one member of the union so that the tighter the union is drawn up the more closely the collar will fit. The advantage of this loose collar is the ease with which the bolt holes may be brought into line and the union be bolted up. The two end members are hexagonal in shape and are easily grasped with any kind of wrench. These unions are manufactured by the Jefferson Union Co., of Lexington, Mass.

ANNUAL REPORT

COLORADO & SOUTHERN RAILWAY COMPANY—ELEVENTH ANNUAL REPORT.

DENVER, COLO., July 1st, 1910.

MR. D. MILLER,
President,
Chicago, Ill.

DEAR SIR:—I herewith submit the report for the fiscal year ended June 30, 1910, which report combines the operations and affairs of the lines operated by the companies named, and which are herein designated as the "Colorado & Southern Lines":

REVENUES AND EXPENSES OF ALL ROADS COMPRISING THE COLORADO & SOUTHERN LINES FOR YEARS ENDED JUNE 30TH.

1910	OPERATING REVENUES.	1909
\$12,040,828.39	Freight	\$10,600,743.01
3,918,092.98	Passenger	3,756,694.54
170,391.82	Mail	169,460.84
324,657.66	Express	266,644.76
324,009.88	Other Operating Revenues	286,869.02
\$16,777,980.73	Total	\$15,080,412.17
OPERATING EXPENSES.		
\$ 2,188,644.76	Maintenance of Way and Structures	\$ 2,162,560.10
2,521,272.66	Maintenance of Equipment	2,447,906.42
274,271.16	Traffic Expenses	277,663.79
5,378,794.21	Transportation Expenses	4,811,851.02
500,472.19	General Expenses	525,706.28
\$10,863,454.98	Total	\$10,225,687.61
\$ 5,914,525.75	Net Operating Revenue	\$ 4,854,724.56

NET DEFICIT FROM OUTSIDE OPERATIONS.

Dr. \$ 4,083.05	Hotels	Dr. \$ 2,406.39
Dr. 2,477.26	Stock Yards	Dr. 21.80
Dr. 15,763.34	Dining Cars	Dr. 4,706.71
Dr. \$ 22,323.59	Total	Dr. \$ 7,134.90
477,869.64	Taxes Accrued	393,906.76
\$ 5,414,332.52	Operating Income	\$ 4,453,682.90
	Rents Balance, Income from Securities	
237,367.75	owned, Other Income and Interest	466,701.78
\$ 5,651,700.27	Gross Corporate Income	\$ 4,920,384.68

DEDUCTIONS FROM GROSS CORPORATE INCOME.

\$ 2,665,098.79	Interest (on Bonds, Deferred Rentals and Equipment Leases)	\$ 2,683,682.13
35,058.19	Sinking Funds	37,843.38
\$ 2,700,066.98	Total Deductions	\$ 2,721,525.51
\$ 2,951,633.29	Net Corporate Income	\$ 2,198,859.17

DIVIDENDS.

\$ 340,000.00	4% First Preferred Stock 4%	\$ 340,000.00
340,000.00	4% Second Preferred Stock 4%	340,000.00
620,000.00	2% Common Stock 2%	620,000.00
\$ 1,300,000.00		\$ 1,300,000.00
\$ 1,651,633.29	Surplus	\$ 898,859.17

The Colorado & Southern Railway Company owns a beneficial interest in one-half of the total Capital Stock of The Colorado Midland Railway Company and also owns one-half of the Capital Stock of The Trinity & Brazos Valley Railway Company. The results of the operations of those properties for the years ended June 30th are:

1910		1909
\$ 132,293.19	(Deficit) The Colo. Midland Ry. Co. (Deficit)	\$ 47,086.74
933,436.01	(Deficit) The Trinity & Brazos Valley Ry. Co. (Deficit)	902,023.85
\$ 1,065,729.20	(Deficit) Total (Deficit)	\$ 949,110.59

Deducting one-half of this deficit from the surplus of the Colorado & Southern Lines, the result is:

\$1,118,768.68	(Surplus) Colorado & Southern System (Surplus)	\$424,303.88
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The percentage of Operating Revenues required for Operating Expenses was 64.75% as compared with 67.81% in the previous year, and the proportion of Income required for Interest was 50.55% as compared with 54.54% in the previous year.

BOND ISSUES.

During the year Refunding and Extension Mortgage bonds of The Colorado & Southern Railway Company were issued to cover expenditures for:	
Redemption of First Mortgage Bonds of The Colorado Springs & Cripple Creek District Railway Company	\$ 68,000.00
Redemption of Second Mortgage Bonds of The Colorado Springs & Cripple Creek District Railway Company	194,000.00
Securities of Stamford & Northwestern Railway Company	1,645,738.24
Securities of Fort Worth & Denver City Railway Company	8,059.41
	\$1,915,797.65

From proceeds of the sale of securities pledged with the trustee, Refunding and Extension Mortgage bonds of the face value of \$83,000.00 were redeemed and cancelled.

On June 20, 1910, the sale of \$3,000,000.00 face amount of Refunding and Extension Mortgage bonds from the Company's treasury was authorized. These bonds were delivered and paid for, \$1,000,000.00 in June and \$2,000,000.00 in July, 1910; the proceeds reimbursed the treasury for expenditures theretofore made for improvements and new lines.

THE TRINITY & BRAZOS VALLEY RAILWAY.

During the year the deficit from operations was made up equally by The Chicago, Rock Island & Pacific Railway Company and The Colorado &

Southern Railway Company. Advances were also made to take care of needed improvements and installments on leased equipment. Construction of the new passenger terminals at Houston has progressed and will be completed within a few months.

THE DENVER & INTERURBAN RAILROAD.

There was nothing done on The Denver & Interurban Railroad over and beyond the building of .95 mile of track in the City of Fort Collins to comply with the franchise given by that city.

THE STAMFORD & NORTHWESTERN RAILWAY.

Mention was made last year of the construction of the Stamford & Northwestern Railway, which was begun in January, 1909. On September 15th, 1909, operations from Stamford to Jayton were begun, and on October 25th, 1909, the road was completed from Jayton to Spur, making a total mileage operated, Stamford to Spur, of 82.5 miles.

IMPROVEMENT WORK.

Reference was made last year to the program adopted of substituting permanent bridges for wooden ones, and that same program has been carried out during the year. The excess cost of such new structures over the cost of replacing in kind the existing ones has been charged to "Additions and Betterments" and amounted to \$86,518.82 on the Colorado & Southern Railway and \$85,735.35 on the Fort Worth & Denver City Railway.

On the Fort Worth & Denver City Railway the work of ballasting was continued during the year. There were expended \$228,589.60, representing 60.05 miles of rock ballast and 1.31 miles of gravel ballast, or 61.36 miles. This makes up to June 30th, 1910, 362.67 miles ballasted with rock and gravel.

On the Colorado & Southern Railway, on the Platte Canon District, 13.74 miles and on the Gunnison District 6.36 miles of 56-pound steel were laid, replacing 40-pound steel, and there were 21 miles of new 85-pound steel laid, replacing 65-pound steel, on the Fort Collins District, namely, between mile-post 44 and mile-post 51 and between mile-post 60 and mile-post 74. On the Fort Worth & Denver City Railway there were 18.58 miles of 85-pound steel laid between mile-post 120.74 and mile-post 139.32. The difference between the value of the steel laid and the steel released was charged to "Additions and Betterments," and appears in statement on page 16.

By agreement with the City of Denver, by which certain streets were abandoned, it was arranged that the railway companies whose tracks crossed Twentieth Street, should contribute to a viaduct, the proportion to be paid by each road being based on the amount of abutting property owned. The Colorado & Southern Railway Company's proportion was estimated to be \$165,000.00. Last year The Colorado & Southern Railway Company paid \$23,447.54 and this year \$50,675.80. The viaduct will probably be completed during the ensuing year.

By agreement also with the City of Denver, a subway at West Alameda Avenue was arranged for. The Colorado & Southern Railway Company's proportion being \$25,000.00. In the past fiscal year The Colorado & Southern Railway Company paid \$2,811.24 toward the construction of this subway. The subway will be completed during the ensuing year.

In July, 1909, arrangements were made with the City of Cheyenne whereby a franchise was granted across certain streets in order that the Colorado & Southern Railway might make a connection with the Chicago, Burlington & Quincy Railroad at Capitol Avenue. Property was bought along the alley between Fifteenth and Sixteenth Streets from Capitol Avenue to a connection with The Colorado & Southern Railway Company's track, the cost of which amounted to \$196,421.33, and a track is now being laid on the property so purchased, and in August of this year connection was made with the Chicago, Burlington & Quincy Railroad. In Greeley The Colorado & Southern Railway Company purchased property to the amount of \$100,120.60 for the purpose of making connection with the Chicago, Burlington & Quincy Railroad and also for extending yard room and facilities at that point.

Because of the congestion of business between Pueblo and Walsenburg, between which points the Colorado & Southern Railway has joint facilities with the Denver & Rio Grande Railroad, The Colorado & Southern Railway Company, through The Colorado Railroad Company, entered into an agreement with The Denver & Rio Grande Railroad Company on May 14th, whereby each company should build a line for itself and enter into joint use of the two tracks as a double line of railroad between Southern Junction and Walsenburg Junction. Contracts were let for the building of the lines and work is progressing as rapidly as possible. This double track will not be completed before September, 1911, but it is hoped that portions of such track may be so built that they may be used at a much earlier date.

NEW EQUIPMENT.

The increased amount of business on the Colorado & Southern Lines called for the following order of equipment:

The Colorado & Southern Railway:	
5 S. G. Switching Locomotives	for delivery October, 1910.
5 S. G. Mikado Type Freight Locomotives	for delivery December, 1910.
5 S. G. Pacific Type Passenger Locomotives	for delivery December, 1910.
1 Dining Car	for delivery September, 1910.
500 Dump Gondola Cars (all steel)	for delivery October, 1910.
300 Box Cars	for delivery June, 1910.
250 Dumping Stock Cars	for delivery September, 1910.

Fort Worth & Denver City Railway:

2 S. G. Switching Locomotives	for delivery October, 1910.
5 Pacific Type Passenger Locomotives	for delivery December, 1910.
4 Baggage Cars	for delivery November, 1910.
200 Stock Cars	for delivery June, 1910.

Deliveries of the above equipment commenced in June, 1910, and have continued since that date.

In addition there are being built at the shops of the Colorado & Southern Railway in Denver:

125 N. G. Box Cars.
50 N. G. Stock Cars.
15 S. G. Caboose Cars.
50 N. G. Coal Cars.

The construction of these cars is nearly completed at this time.

All of this equipment is to be paid for in cash out of funds derived from the sale of Refunding and Extension Mortgage bonds.

Respectfully submitted,

A. D. PARKER,
Vice-President.